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Felice Gimondi

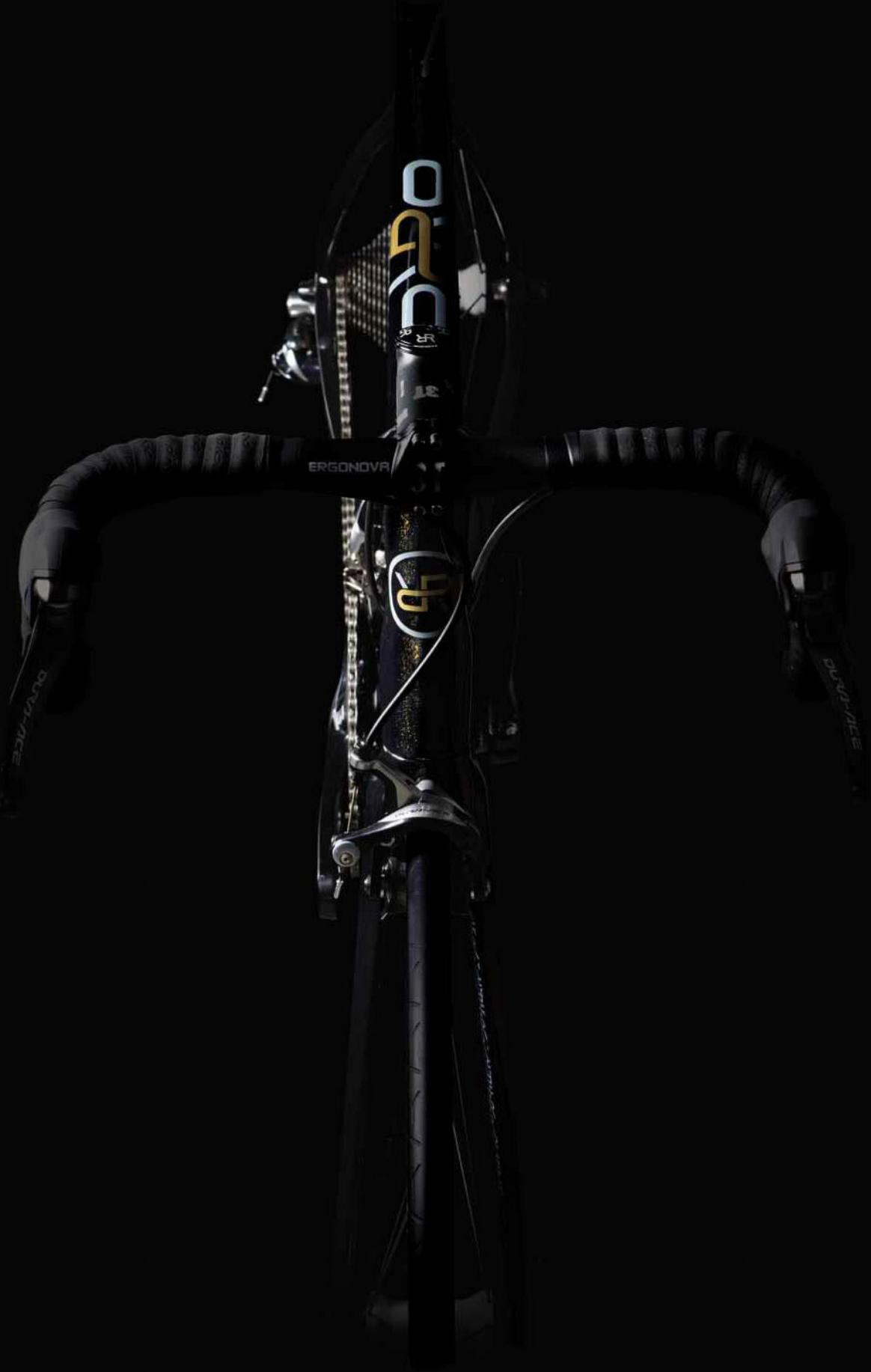
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Jurassic World

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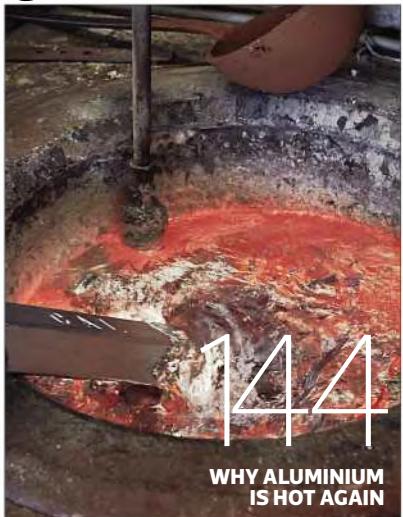
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ED'S

LETTER

Cyclist

August 2015 // Issue 38

Photo Danny Bird



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If you could build a dream bike from the most expensive stock parts available, what would it look like? The answer is here

How much would you pay for a bike? It wasn't that long ago that if you announced that your new bike cost over £1,000 you'd be met with a sharp intake of breath and an accusation of concealing a Lottery win. Now a grand is considered entry level.

Even in the three years since *Cyclist* launched we've noticed a significant ramping up of bike prices as the big brands look to out-do each other in terms of technology and desirability. In recent issues we've featured an £8k Specialized, an £11k De Rosa, an £8k Giant, a £7k Look, a £7.5k Wilier, a £9.5k Pinarello and an £11k Trek. And that's before we enter the world of custom bikes, such as the Rolo (issue 35), which costs £6,000 for the frame and fork alone, or the limited edition Sarto 18K (issue 36) that includes gold inlay and crocodile leather trim for a mere £18,000.

Are these bikes worth the money? Certainly not on any logical level. A £1k bike might be twice as good as a £500 bike, but a £2k bike is certainly not twice as good as a £1k bike, and a £4k bike is probably only slightly better than a £2k one. By the time you get into five figures the laws of diminishing returns have truly kicked in and the extra suitcase of cash is only buying you a few grams of weight saved or an extra kmh into a headwind. But then, buying a bike isn't a logical activity.

We don't always choose the bike that best suits our needs, but the one that makes us feel amazing when we swing a leg over it. We can't justify the expense; we can only aim to reckon it against the need to feed the kids. So if you have just won the Lottery, then it is only reasonable to blow a large chunk of it on the most gloriously expensive bike you can find. In which case, you might want to turn to page 134.



Pete Muir, Editor

Exciting news! The growth of the *Cyclist* empire continues apace with the launch of our new website, imaginatively titled cyclist.co.uk.

It's the place to go to get the latest news on bike launches, reviews of kit, updates of what's happening at the Tour de France, details of the best rides and sportives, and lots of other stuff.

Give it a visit (only after you've finished reading the magazine, of course).

The screenshot shows the homepage of Cyclist.co.uk. At the top, there's a navigation bar with links for 'HOME', 'REVIEWS', 'NEWS', 'TESTIMONIALS', 'HEALTH & FITNESS', and 'MAGAZINE'. Below the navigation, there's a banner for 'LESS FATIGUE MORE CONTROL' featuring a Bianchi bike. To the right of the banner is a 'Reviews' section with a thumbnail for 'Scott Port Premium Disc review'. Further down, there are sections for 'Latest Reviews' featuring 'Scott Port Premium Disc' and 'Aprilia Inverso Sora review'. The overall layout is clean and modern, with a focus on cycling news and product reviews.

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Email carlotta_serantoni@dennis.co.uk



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Why the big brands are pouring time
and effort into producing a new tier
of top-end aluminium bikes



Photo Fred MacGregor

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Cycling WEEKLY 9

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lead out

All the stuff that makes you glad to be a cyclist

Fast, redefined

Trek hasn't just given its flagship Madone a cursory makeover – it has redesigned the concept of a race bike

Words **PETER STUART** Photography **HENRY CARTER**





The Madone has a long history at Trek, having been the weapon of choice for Lance Armstrong during his Tour 'successes' (at least the bikes raced clean).

Named after Armstrong's favourite training climb in the south of France, the Madone has changed significantly over the past decade, but this latest version must count as the most significant update yet.

Starting from the rear, the first noticeable change from the previous Madone is the introduction of an IsoSpeed decoupler system, an idea borrowed from the cobble-busting Trek Domane. This is a bearing that sits between the upper part of the seat tube and top tube, providing a certain amount of vertical suspension. But unlike on the Domane, the entire seat tube doesn't move independently of the top tube – instead just the top part of the seat tube (not to be confused with the black seat mast) runs inside the lower part, which is still connected to the top tube. Essentially,

there are two seat tubes, one inside the other, that allow a high degree of vertical flex while maintaining a lot of lateral stiffness.

'You get a whole bunch of the compliance out of the [inner] seat tube of the Madone,' says Ben Coates, Trek's road product manager, 'but we get huge benefits in terms of handling, steering, sprinting, pedalling efficiency and aerodynamics from that [stiff] outer tube.' Trek now claims that the Madone has the same levels of compliance as its Émonda model, which is pretty impressive for a bike that sells itself mainly on its aero credentials.

The previous Madone, despite its fairly conventional tube shapes, was one of the industry leaders in the wind-tunnel. For this bike, though, Trek has looked beyond the frame to ensure that every element is as aerodynamic as possible.

'Everything was about integration, and we can do that to a much greater level because of our link with Bontrager,' says Coates. It's no surprise that the bike comes with Bontrager

Aeolus D3 wheels and an all-new Madone aero bar-stem combo. Consequently it's a fairly fixed package – the brakes are totally integrated into the frame, and the Madone bar-stem will be the only one compatible with the frame. This is on account of the complex internal cabling, although Trek will offer a wide variety of sizes and shapes, and has an integrated Garmin mount as standard.

This latest Madone uses a new version of the KVF Kammtail tube shaping and Trek claims that the bike is the most aerodynamic on the market for wind yaw angles of 5° or more. That is, it's not the most aerodynamic when the wind is hitting the rider straight on, but Trek argues that an angle of 5° or more is the most likely wind conditions that riders will experience in the real world.

Perhaps the most striking innovation on the Madone is the removal of every single external cable at the front of the bike (a mere 5cm of cable is visible above the rear brake). 'Standard external cable housing adds up to 40g of drag



Trek Madone Race Shop Limited Edition (as pictured), £9,750. Frameset from £4,100 (H1 frame) and £3,350 (H2 frame). Full builds from £4,500. Contact trekbikes.com

[or roughly 5 watts of drag at 45kmh],' says Coates. 'If you hide those cables you actually free that up. Everything was focused on performance and integration.' The head tube has been radically redesigned to allow the front brake cable to run internally, while a complex internal structure routes the remaining cables into the top tube and down tube.

The brakes, which are Trek's own design, are both concealed from the wind. It's the front brake, though, where the most exceptional engineering has been employed. The top of the front brake's mechanics are concealed within the head tube, but to accommodate CPSC (Consumer Product Safety Commission) regulation on the range of fork movement Trek designed 'Vector Wings' (flaps) on either side of the head tube that open to allow the front fork to move freely during low speed maneuvering.

Despite all the innovations and aerodynamic features, the bike weighs just a shade above the UCI minimum, and our 56cm bike with rear light and Garmin mounts weighed exactly 7kg.

The frame comes with two options for geometry and layup. At the top is the H1, which is the same as the bikes used by the Trek Factory Racing pro cycling team, and has an aggressive race setup and higher quality carbon. It is made entirely in Trek's Wisconsin factory and is available through Race Shop Limited and Project One orders via the Trek website. The H2 version will be more widely available and uses a slightly lower grade of carbon fibre and comes with a more relaxed geometry.

After a few rides on the new Madone at the launch in June, our early impressions of the bike are that it offers an enigmatic blend of comfort and speed. Stay tuned for a more thorough review in an upcoming issue of *Cyclist*. ☀



Mavic Ksyrium Pro kit

£tbc, mavic.com

It's not often that a manufacturer manages to produce something genuinely different in the clothing market, but that's exactly what Mavic has done with its new range of Ksyrium Pro kit. Aficionados will note the classic 'Mavic yellow' has been replaced with some more Buddhist-monkish earth tones, but the real innovation lies beneath the twill.

Where other manufacturers use gels and foams to cushion sit bones and palms, Mavic has worked with Ortholite, a company that usually specialises in memory-foam-style insoles, and taken that technology and put it in the Ksyrium Pro bibshorts' seat pad and mitts.

'We've been using the material in our shoe insoles, but with 60% of your bodyweight on your saddle it seemed obvious to put it in bibshorts,' says Mavic's Maxime Brunard. 'Compared to gel, for example, Ortholite filters vibrations six times more quickly.'

Our trials on gravel and road were met with positive results, which leads us to think this might just prove a new direction for bibshorts comfort. Keep an eye out for the kit's release later this year.





Bontrager Ballista helmet

£160, bontrager.com



hen Jens Voigt made history by beating the Hour record, albeit temporarily, for the first time in nearly a decade, aero geeks the world over were captivated by the mysterious lump of aerodynamic polystyrene strapped to his head. The then-unknown helmet has now broken cover, and the Bontrager Ballista is available to the masses.

The Ballista promises to save between 3 and 13 watts of power depending on the angle of yaw compared to Bontrager's conventional road helmet. 'We see this as an everyday aero helmet,' says product manager Jason Fryda. 'We looked at a whole bunch of options in terms of design and settled on three main vents and two moderated vents.'

Temperature control has been as much a part of the design as the aerodynamics, and Bontrager modelled how air travels over and through the helmet with the aim of keeping it cool enough for intense riding yet as aero as possible. The internal fit-system suspends the helmet slightly over the front of the forehead to allow air into the internal channels.

On the outside, Bontrager has gone for a longer tail, similar to the Specialized Evade helmet, rather than the rounded rear favoured by the Giro Air Attack. At 298g for a size large, the Ballista is impressively light, especially as it meets the more stringent safety requirements of the USA and Australia, which often requires more impact protection than helmets made solely to meet European standards.



Garmin Fenix 3 watch

£369.99, garmin.com

Wearable tech is a boom industry, and the Fenix 3 from Garmin is at the forefront of the GPS-enabled activity-tracker charge. Think of it as an Edge computer for your wrist – harvesting all the usual biking metrics from GPS, Bluetooth or ANT+ sensors – but one that also provides live data for running, swimming, indoor workouts and even sleeping. If you weren't addicted to data already, you soon will be.



Fabric Bottle

£11.99, fabric.cc

A cage fighter without a cage is merely a fighter. But a water bottle minus its cage is potentially so much more. Fabric's new cageless design not only cleans up the lines of the bike but saves a chunk of weight too. The mounting hardware is just 3g in total. Our first fumblings suggest some initial practice is required to get the bottle in and out slickly, but it's solid once in place.

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If any more Formula 1 engineers defect to cycling then Bernie Ecclestone's going to have a problem. One of the latest recruits is ex-Sauber engineer Jean-Paul Ballard, who's been instrumental in creating Swiss Side's Hadron wheels. Available in 62.5mm and 48.5mm rim depths, these carbon-faired, alloy brake track hoops have some serious aero data behind them. Take the Hadron 485s pictured here. Swiss Side claims they save 1m51s over 40km ridden at 35kmh at 180W, or 4m09s over 90km (compared to its Heidi low profile wheel).

Head-to-head wind-tunnel tests are reported to show the Hadron 625 out-performing what Swiss Side calls the 'big brands', while steering torque – the resistance to turning a rotating front wheel that's associated with deep-profile rims – is apparently encountered less than with its competitors too.

It's hard to independently verify such data, but if true, and when combined with claimed 1,639g (425) and 1,686g (625) weights and the low price, the Hadrons make for an enticing proposition.



Torq Snaq bars

£1.99, torqfitness.co.uk

With a host of nutrition products to cover your on-the-bike needs, Torq has turned its attention to your on-the-sofa needs. Its Snaq bars are designed primarily to accompany your mid-morning espresso or afternoon cuppa, not see you through a hard day in the saddle. The nutritionally dense snacks aim to be healthy while still ticking the indulgence box. The three gluten-free flavours – white chocolate and raspberry fizz; dark chocolate and orange zest; dark chocolate and banana chip – are cold pressed, not baked, thus retaining the goodness of the ingredients, which include whey protein crisps and maltodextrin to aid recovery.



TomTom Bandit camera

£299.99, tomtom.com

Action cams are great for capturing your rides, but trawling through the footage editing your heroic two-hour ascent up the Stelvio Pass is less fun. Luckily, the TomTom Bandit HD camera is here to help. Using its built-in GPS, accelerometer and heart-rate strap compatibility, it tags exciting moments as you record and (via the smartphone app) automatically edits them into a short film. Alternatively, buy a tandem and rent Martin Scorsese for the afternoon.



Wahoo Kickr Snap Turbo Trainer

£649.99, uk.wahofitness.com



ith the Snap, the world's most excitably named fitness company has produced a more affordable, wheel-on alternative to its big brother, the direct-drive Kickr.

'The Kickr Snap is aimed at the cyclist who loves to ride for the fun of it. While it doesn't feature all the bells and whistles of our flagship model, the Snap is priced at a third less,' says Kevin Abt, Wahoo's sales and business development director.

At 17kg, the Snap isn't the most portable of trainers but the high-grade steel construction forms a robust base, and the high-inertia

flywheel creates an accurate and consistent ride feel. 'Our top "wheel-on" competitors lack a flywheel to provide the inertia of a rider in the real world. The Snap's 5kg flywheel is the heart of the device, and its effect is felt every time you begin to pedal, or choose to lay off the throttle and coast for a bit,' says Abt.

ANT+ and Bluetooth 4.0 connectivity allows complete resistance control from a smart-device. Used in conjunction with third-party apps such as Zwift and TrainerRoad, the Snap makes indoor training truly interactive and competitive, which should make your pain cave a little more agreeable.

Castelli Luggage

£26–£240, saddleback.co.uk

Castelli's new range of luggage is aimed at the competitive cyclist. 'This project started four years ago when we felt a true cycling luggage set didn't exist,' says Richard Mardle of Saddleback, Castelli's UK distributor.

'We have a great resource at our disposal in the form of Castelli-supported athletes, so we compiled all their positive and negative travelling experiences to develop the luggage,' he adds. 'Approaching the design with this knowledge made it easy to innovate, resulting in products that make life on the road easier.'

The range includes two sizes of rolling travel bag (one of which is pictured), a duffel bag, a backpack and a race rain bag. They all come in black with red trimmings and include pockets and sections designed to help organise race gear and travel essentials. Even the outer fabrics are Gabba-inspired to ensure kit stays as dry as possible.



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Olympia Leader

£6,122 (as pictured), poshbikes.com

It might not be the first name that springs to mind when you think of veteran Italian bicycle brands, but with origins traceable back to 1893, Olympia is actually the second-oldest bicycle maker in Italy after Bianchi (1885), and by our reckoning the third-oldest in the world (Raleigh was founded in 1888). However, with the disc-brake Leader, Olympia is not resting on its vintage laurels.

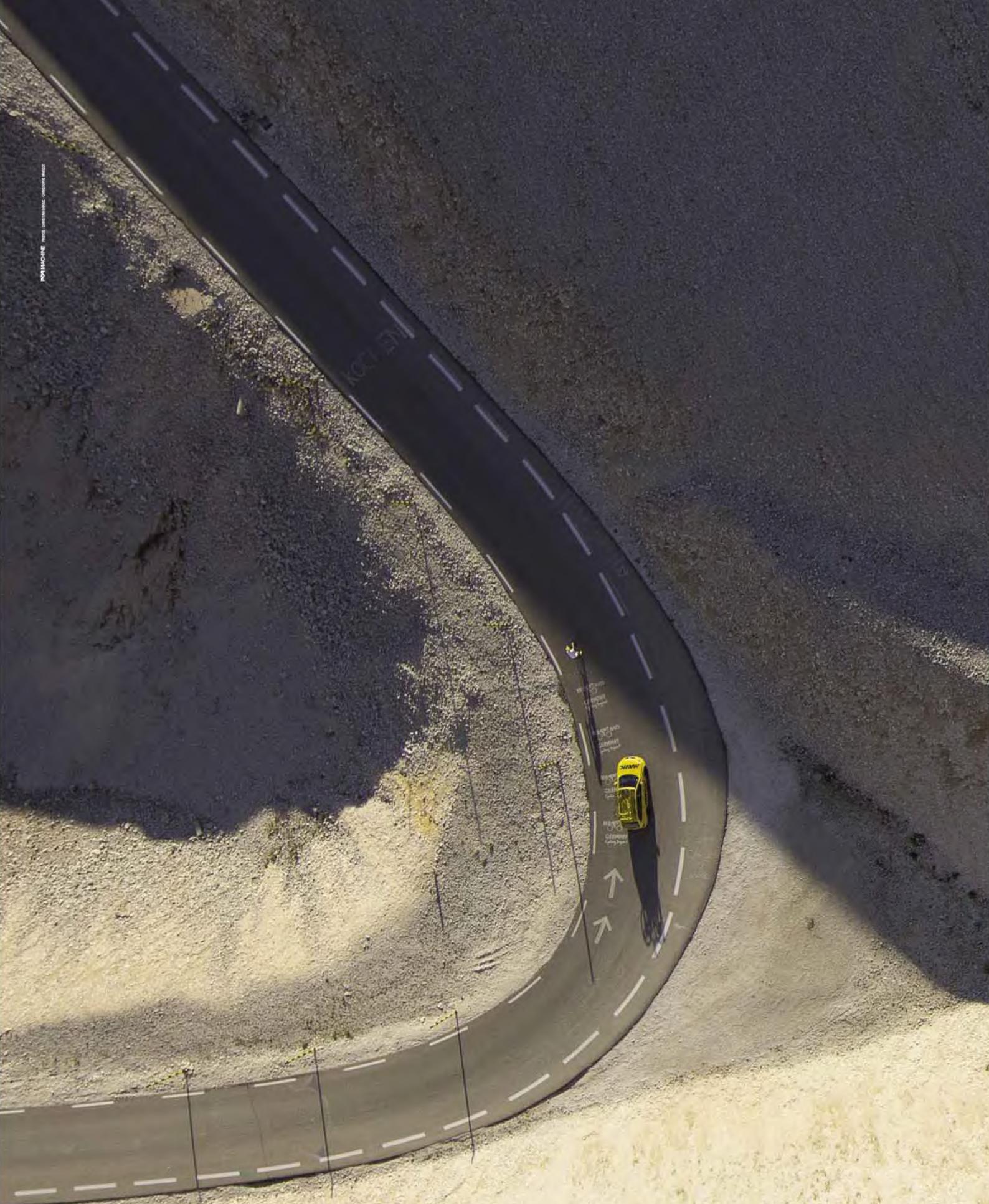
'Adding disc brakes to a "conventional" bike only has one benefit – better brakes,' says Olympia distributor Andy Wallis. 'The Leader has been designed from the ground up, which allowed Olympia freedom to think beyond the restrictions that regular brake callipers enforce.'

By that, Wallis specifically means stiffness. According to Olympia, rim calliper brakes dictate that the fork crown and seatstays have to be in a particular proximity to the wheel such that they provide enough clearance while still being close enough for the brakes to contact the rim. Disc brakes, however, don't hinder frame design in the same way, such that seatstays and fork legs can be made shorter as they no longer need to accommodate space for rim callipers.

'The bottom headset bearing on the Leader is closer to the wheel, reducing the fork crown height and thus making the bearing-to-axle distance shorter, increasing stiffness,' says Wallis. 'Likewise, the seatstays are shorter for increased stiffness in the rear triangle in the lateral plane, although their profiling aims to increase vertical flex for comfort.' The upshot, he claims, is a stiffer, more comfortable frame, with better braking and lower frame weight, as the more compact rear triangle and shortened fork use less material, with this build coming in at 7.6kg.

Interestingly for a new build, Olympia has eschewed thru-axes, stating that the Leader is strong enough to cope with the extra stresses generated by disc brakes. However, it's still been careful to pick up on the market's aero penchant, with a seat tube 'spoiler' to push air over the rear wheel, a hidden seat bolt and tessellating fork crown and down tube.

Currently Olympia only sells full-builds in order to keep the costs down, however UK distributor Posh Bikes will happily work with customers on custom builds. Prices start from £3,474 for a Shimano 105-equipped Leader with Vision Team 30 wheels, and top out at £8,954 for a build with Dura-Ace Di2 and Vision Metron 40 wheels.





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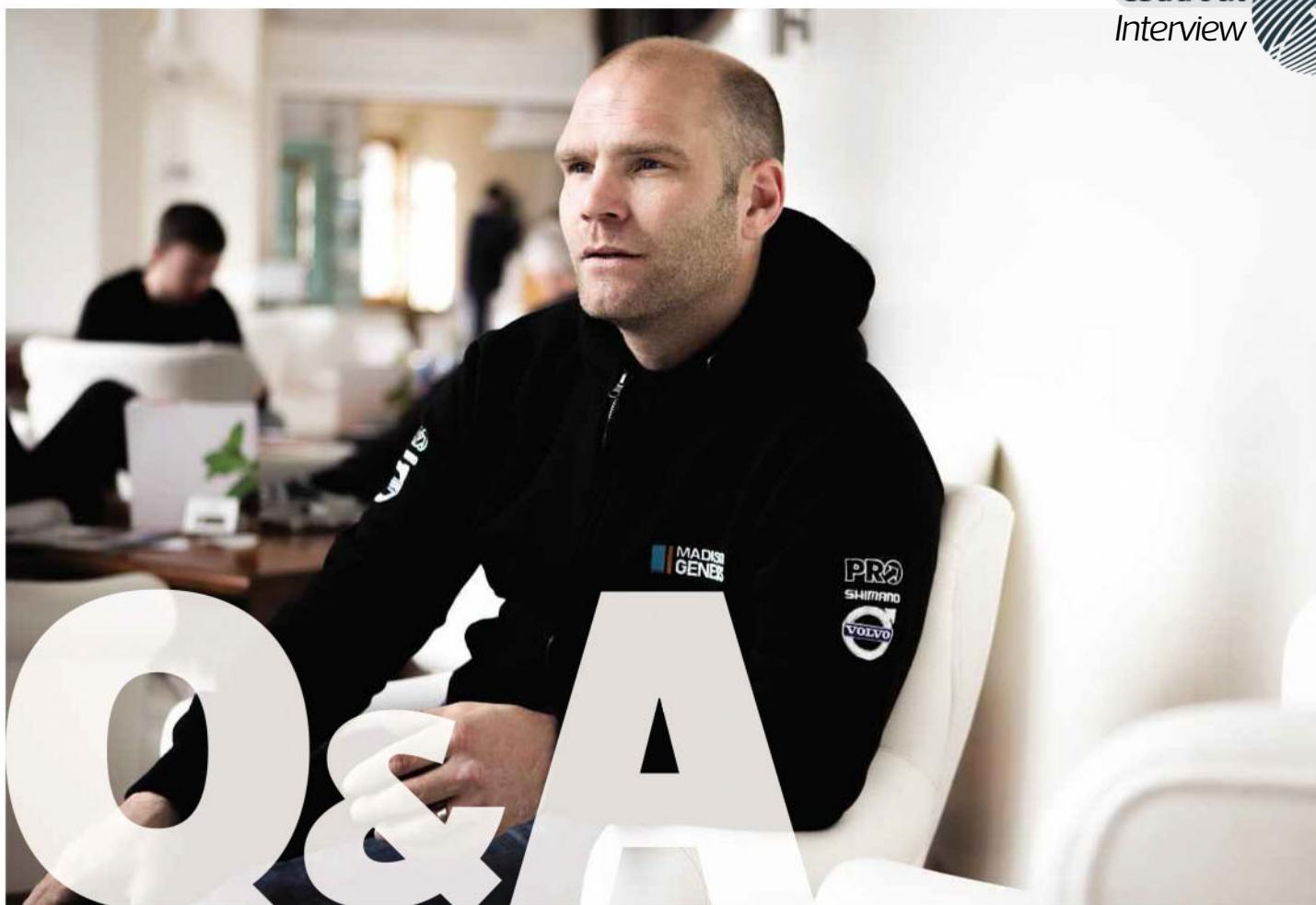
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Roger Hammond

The Classics specialist turned Madison Genesis team manager tells *Cyclist* about sleeping in cars, the dangers of Paris-Roubaix and what cycling can learn from F1

Words MARK BAILEY Photography CHRISTOPHER LANAWAY

Cyclist: Looking back to your pro career, did you ever think cycling would become so popular in Britain?

Roger Hammond: When I was a pro in Belgium [1998 to 2004] my teammates couldn't understand the animosity between cyclists and non-cyclists in the UK. The issue was always about reaching a critical mass. Once there were enough people riding bikes it wouldn't matter what people in cars or the press thought about the sport. But I never could have imagined it getting as big as it is now. I remember my grandma – bless her – saying, 'When are you going to get a proper job?' I'd tell people I was in advertising because after years of explaining whether or not I got a salary I was exhausted. A good friend bought a new bike recently and he said, 'Roger, I never knew you were a pro cyclist.' We've been friends for decades but we'd never even talked about it. Now he's obsessed with cycling. It's bizarre.

Cyc: Are you happy you took the old-school route into the pro scene?

RH: Yes and no. I remember when I first moved to Belgium I wasn't sure what was going on. There was a mix of fear, worry, aspiration and excitement. If you follow a predetermined system like today it probably takes a little bit of the magic away, but you will achieve your full potential much quicker. The magic comes when you're winning WorldTour races, rather than still working out what food to have for breakfast when you are 27 years old.

Cyc: You had a long career, from being World Junior Cyclocross Champion in 1992 until retiring in 2010. What are your greatest memories?

RH: All the races merge into one and I can't even remember which years I was National Champion. But I can remember sleeping in a car in Belgium when I moved over there. And I can remember

Age: 41
Nationality: British
Honours:
National Road Race Champion 2003, 2004
National Cyclocross Champion 1994,
2001-2004,
2006, 2007
3rd, Paris-Roubaix
2004

the first night I turned up at the home of the Belgian family who I would be lodging with, sitting in their front room feeling awkward while they kicked their daughter out so I could have her bedroom. I loved the fact that I went from sleeping in the back of a Vauxhall Nova to floating in a yacht offshore near the Cayman Islands with the owner of Walmart.

Cyc: Was it tough to be a pro in an era wrecked by doping scandals?

RH: There was a lot of controversy and negativity associated with that era but I probably wasn't the most unlucky one. I turned professional in 1998 [the year of the Festina doping scandal] so it was hard, but the other side of the coin is that rather than emerging into a world where drugs were part of the system I arrived at the time of a huge wake-up call. There was a big scandal and I never wanted to be a part of it. I never wanted

► to be in the same position as those guys who got the phone call or the letter or the knock on the door.

Cyc: Was sleeping in an altitude tent your way of trying to keep up?

RH: It was my way of finding marginal gains, but in a fair way. Altitude tents weren't banned and I convinced myself that ethically it was OK. Some people live or train at altitude so I thought: why not bring the altitude to me? Cheating is getting something for nothing but altitude tents leave you absolutely knackered. It's not a shortcut, that's for sure.

Cyc: Why did you enjoy the Classics so much?

RH: They suited my skills because I came from a cyclocross background and I loved the drama. I also knew I was better off with one-day races. There are so many elements like tactics, skill, teammates, knowledge and timing, and in the bigger tours I didn't know what other riders were up to. For me in the Classics it was more of a level playing field. I only did one Grand Tour in my whole career. That wasn't a coincidence.

Cyc: What are your earliest memories of Paris-Roubaix?

Hammond says he remembers only snapshots of his third place at Paris-Roubaix in 2004: 'I was taking every risk I could, at 60kmh on one of the worst roads in Europe. I thought, "I'm dicing with death, not trying to win a bike race"'

RH: I can remember watching it on television when I was a kid. I remember the cobbles and the mud and the sheer excitement. When I got into cycling I had three goals: to win Paris-Roubaix, a stage of the Tour and the World Cyclocross Championships. It's not a coincidence that all three of those were on television: if you're exposed to things at a young age they capture your imagination. As a fan it's good to watch all the Classics, though – the real drama comes from watching how tactics and form changes and how the whole story grows and evolves. That's more interesting



'You need Froome, Nibali and Contador facing each other in all the big races. You wouldn't have the Monaco Grand Prix with Fernando Alonso racing but Lewis Hamilton at home'

than just watching the last spin in the velodrome in Roubaix.

Cyc: Can you ever be fully happy with your third place in 2004?

RH: It's strange when I look back. I almost imagine it in the third person. For years afterwards I just remembered the pain of not winning. I felt it was a missed opportunity. But over time I recall only snapshots of the race. I can remember Peter van Petegem [a Belgian rider for Lotto] coming up to me and saying, 'You're going really well. On the next sector I'm going to attack. Come with me.' This was a guy who had won it the year before and was leading the World Cup so I felt like a million dollars. I remember coming through the Carrefour de l'Arbre, taking every risk I could, riding at 60kmh on one of the worst roads in Europe, with the crowd inches away. I thought, 'I'm dicing with death here, not trying to win a bike race.'

Cyc: Is Paris-Roubaix the hardest race you did?

RH: I'm probably supposed to say that it's the hardest race and that the pain ►



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It's ridiculous, but the truth is it was one of the easier races for me because it matched my skills as a rider. When I hit the cobbles I started to relax. You're on the bike for about five hours but for me it felt more like five minutes. You are so focused, you can't lose concentration and it feels like time flies.

Cyc: You're known for your attention to detail. How important is it?

RH: You need to know every detail, every turn in the road and every possible scenario. A decision might only save you two seconds in the wind but that could be the difference. You need to know form, history and rider friendships. What happens at Omloop Het Nieuwsblad can affect what happens in Paris-Roubaix. I remember in one race a load of riders started attacking me and working together, and I couldn't understand why. Afterwards I realised they had been roommates the season before. Little details matter.

Cyc: What's your biggest challenge as team manager at Madison Genesis?

'I'm happy to watch now. When I see Tom Boonen battering people in races I remember the stress of what that feels like and I'm glad it's not me'

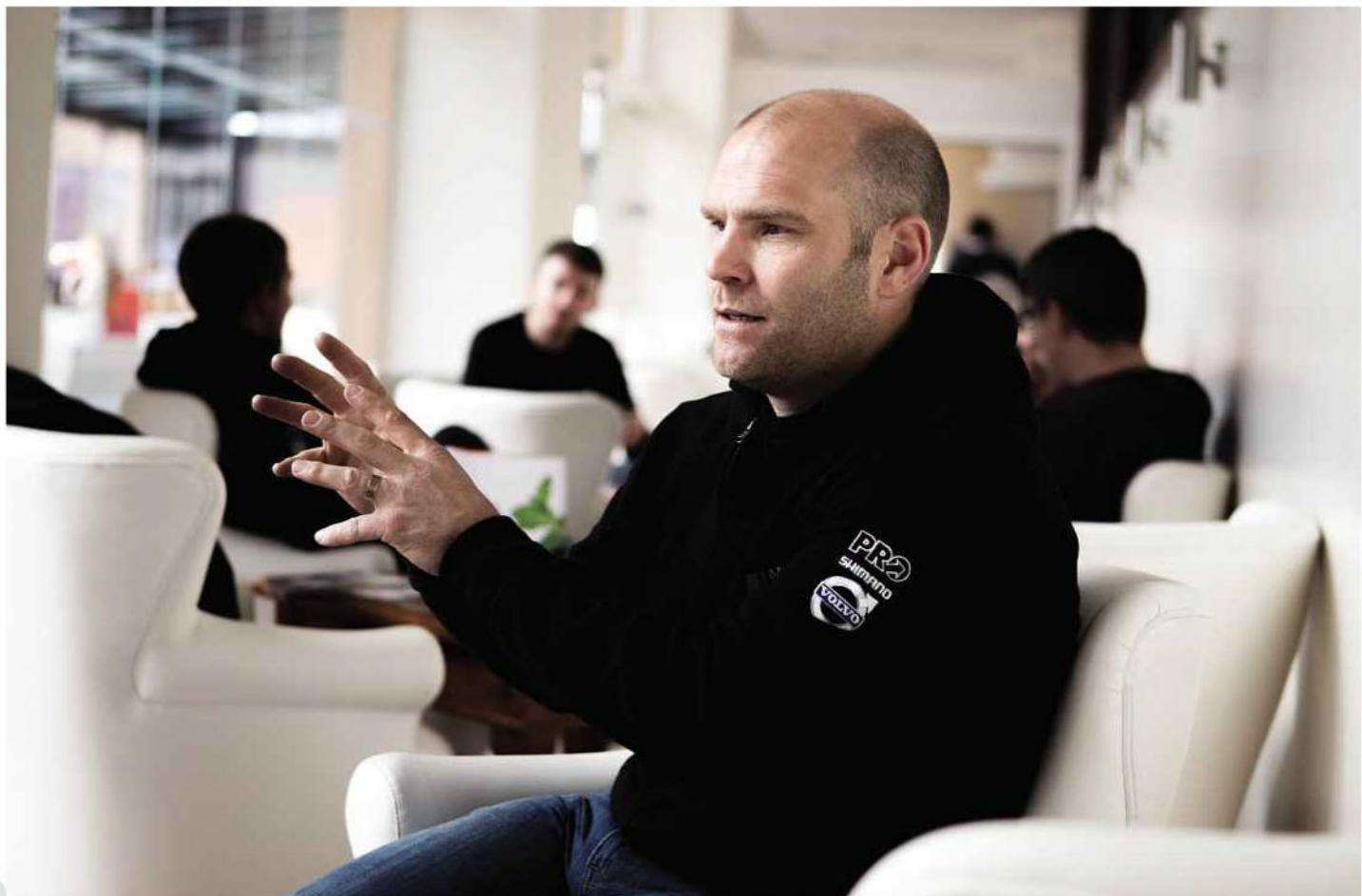
RH: As a rider you are in control of everything and you have an excuse for everything because if you don't have a reason for why you haven't just won the race you can't go out with the same gusto in your next race. On this side of the fence things are very different. You have to be more objective and the amount of time you put into it is not always directly related to the results. But I like to think that when I advise the guys, at least they know I have been there and done it. So when they kick my head in on a training ride they can go into a race with confidence. But I'm happy to watch now. When I see Tom Boonen battering people in races I remember the stress of what that feels like and I'm glad it's not me.

Hammond learnt the value of attention to detail during his racing career: 'In one race a load of riders started attacking me, and I couldn't understand why. Afterwards I realised they'd been roommates the season before. Little details matter.'

Cyc: What aspect of pro cycling would you like to change?

RH: That's a whole can of worms. We need tremendous change. The sport needs to be more professionally run and we need more rider representation too. Cycling has developed so quickly and the organisers are still catching up, so it looks like they are just putting out fires all the time. But most importantly you can't let riders avoid each other by dodging races. You need guys like Chris Froome, Vincenzo Nibali and Alberto Contador facing each other in all the big races. You wouldn't have the Monaco Grand Prix with Fernando Alonso racing but Lewis Hamilton staying at home, or footballers dropping out of the FA Cup Final to play in another match. It's absurd. When you think of all the new people coming into our sport, it is too confusing. We need to see the best riders, in the best races, smashing 10 bells out of each other. ♦

Madison Genesis recently won the Tour Series. Follow the team at @MadisonGenesis



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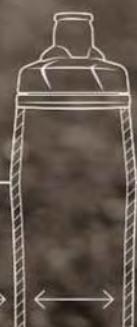
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Tooled up

There are many tools in a bike mechanic's arsenal, but some are more essential than others

Words **STU BOWERS**

Photography HENRY CARTER





hen it comes to fixing and fettling a bike, there are those who believe every job can be tackled with a Swiss Army knife, and those at the other end of the spectrum who have every tool known to man (but often no idea what to do with 90% of them). *Cyclist* spoke to Team Wiggins mechanic, Nick Walling, to get his thoughts on covering the essentials at home.

'A set of allen keys almost goes without saying,' he says. 'Personally I prefer Park Tool and like to use a three-way allen key most of the time. Good quality is important so they're a precise fit and they don't round off.'

'My oldest friend in the toolbox I call "Trigger's broom". It's an old set of Shimano cable cutters I've had since the mid-1990s and they're still going strong, although I've had to fit new handles – hence the name. Good cutters are essential. Being able to cut both inner and outer cables neatly and cleanly makes for a perfect job in no time. And for the final touch I like the neat cable-end crimp built into the Park Tool pliers.

'I would also say a derailleur hanger checker is a worthy investment,' he adds. 'Most niggling gear issues are due to poorly aligned mech hangers, even on brand new bikes. It's always good to have a chain checker to monitor drivetrain wear, and when it's getting tired you'll need a chain tool [splitter] at some point.'

'These days a torque wrench is a must. I mostly use a preset Bontrager 5Nm wrench, as this covers many bases on modern road bikes.'

So you don't get too distracted by the plethora of gadgets, ratchets and wrenches on these two pages we've pulled out a few shining examples.

See p192 for stockists





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175th ORBEA



Weight on back or bike?

Professional cyclists have been known to slip their water bottles into their jersey pockets in order to climb faster. But does it really save energy?

Words JAMES WITTS Illustrations ROB MILTON



In *The Rider*, author Tim Krabbé recounts a story about the lengths Jacques Anquetil went to in search of victory: 'He used to take his water bottle out of its holder before every climb and stick it in the back pocket of his jersey. Ab Geldermans, his Dutch lieutenant, watched him do that for years, until finally he couldn't stand it any more and asked him why. And Anquetil explained.

"A rider," said Anquetil, "is made up of two parts, a person and a bike. The bike, of course, is the instrument the person uses to go faster, but its weight also slows him down. That really counts when the going gets tough, and in climbing the thing is to make sure the bike is as light as possible. A good way to do that is to take the bidon out of its holder." So, at the start of every climb, Anquetil moved his water bottle from its holder to his back pocket.'

Doubt has been cast about the veracity of the story, not least because of the lack of photos of Anquetil with bottle in jersey, but in these days of marginal gains, we wanted to find out if the Anquetil approach would offer any advantage.

The pendulum swings

'I don't think there's been any published literature on this topic, so the closest analogy is backpacks and load carriages,' says Stephen Cheung, professor in environmental ergonomics at Brock University in Canada. 'Intuitively, I'd have said the lower the weight placement, the lower the metabolic cost because a lower centre of gravity requires less energy simply to remain stable. However much of the backpack research doesn't reflect this.'

A study led by Professor Abe of Kyushu University in Japan looked at the energy cost of walking with loads that corresponded to

15% of the subjects' body mass. Fourteen subjects walked on a treadmill in five-minute increments with and without loads on their back, and the results showed that energy cost was reduced when they carried the load on their upper back compared to their lower back.

'The theory is that the load at relatively low speeds acts as a rotating pendulum, decreasing the amount of energy costs [by returning energy back into walking motion],' says Cheung. 'However, at the greater speeds of cycling, I don't think this pendulum effect would be an aid.'

Indeed, the lateral movement of the bottle in the pocket could inhibit economy if the bottle is not held firmly, according to Andy Ruina, professor of mechanics at Cornell University in America. 'It's all down to energetics and power,' he says, before calculating how much power might be wasted by Anquetil's water bottle slipping ever so slightly in his rear pocket. ☎

● 'In this case, power is force multiplied by distance moved by the bottle multiplied by the number of times it slips each second.'

'Let's say Anquetil's metal bottle and liquid weighs 1kg, it slips back and forth 1cm each time he pedals, and his cadence is 90rpm so it slips three times each second,' Ruina adds. 'Taking that equation, you have force [gravity x mass], which is $9.8 \times 1\text{kg} \times 0.01\text{m}$ of sliding multiplied by three strokes per minute. That equals 0.3 watts wasted from the bottle moving about in the rear pocket.'

Keep still, dammit

So that's it. When ascending, Anquetil was wrong to place his bidon in his jersey pocket. Not quite, says Cheung. 'When you climb out of the saddle, your upper body should remain relatively stable and so have less lateral movement than the bike, which you're swinging from side to side. So by putting the bottle in his shirt, his bike will not only feel lighter, there will be less energy lost from the side-to-side motion of his bike.'

'No, I don't agree,' says world-renowned bicycle technician, framebuilder and tech writer Lennard Zinn. 'If you're out of the saddle, you're constantly lifting your body up and down with the pedal stroke, even if your

'On a descent, and if the road is quite rough, the weight of the bottle is better off on your back, because of the extra suspension afforded by you, the rider'

upper body isn't moving laterally too much. So even though you're moving the frame more, I'd still argue that the lower the weight of the bottle is held, the less energy is wasted.' It's a theory supported by professional WorldTour teams, who often add extra weight to their bottom brackets to hit the UCI minimum weight regulations of 6.8kg, although they don't have the choice of carrying ballast in pockets.

Ruina, Zinn and Cheung all agree on one thing, however: if your bike's on the flat and remains upright, the energy cost of having the bottle held in the cage or in your jersey pocket would be the same because you're not moving up and down as you might be when sprinting or climbing.

'Then again,' muses Zinn, 'things change if Anquetil had a water bottle on his handlebars.'

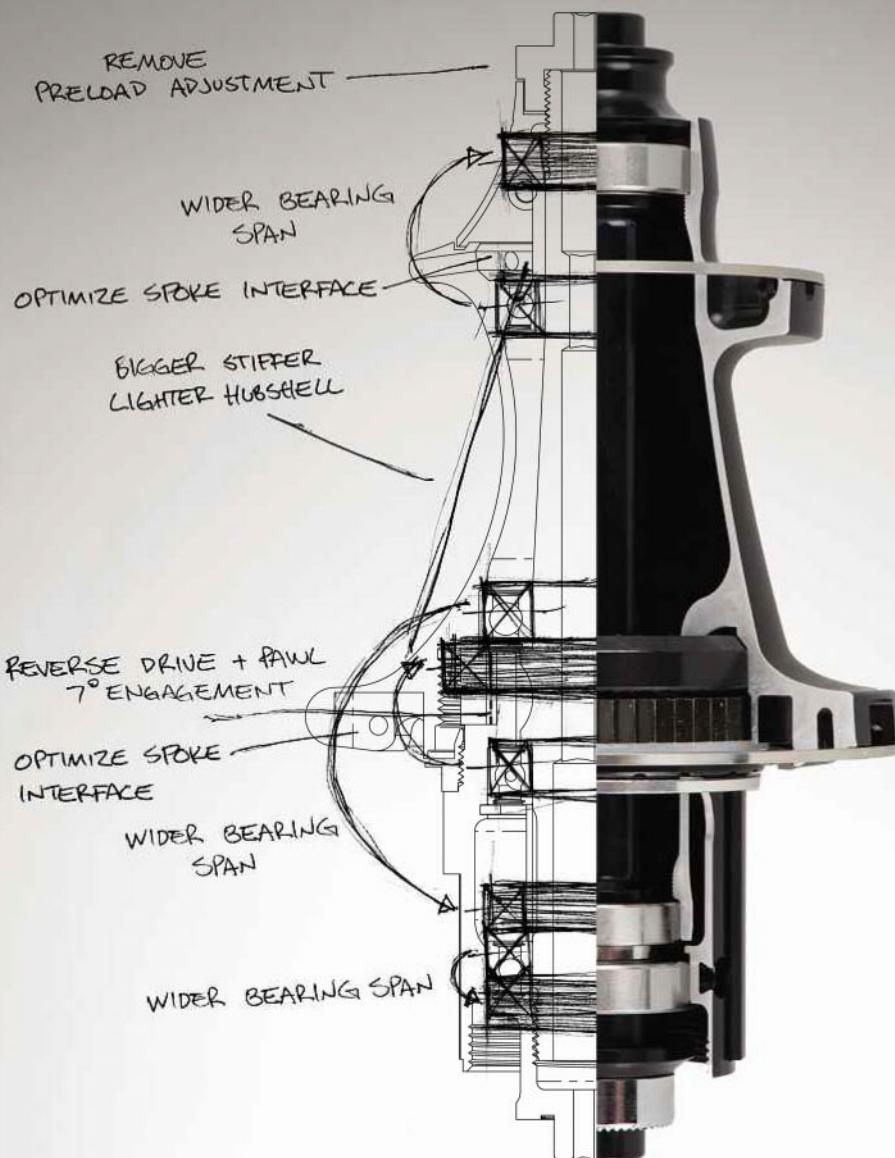
Until the 1960s, cyclists often carried a second bottle on the handlebars because, at the time, Tour rules stated that riders must carry a pump, which often took up the entire length of one frame tube, leaving no room for that second bottle cage.

'I can see the benefit of putting a bottle in your pocket if you had been carrying it on the handlebars,' Zinn adds. 'Your bike would really snake around in front of you if you're exerting yourself like up a hill or in a sprint, and you'd haemorrhage energy just trying to remain in a straight line.'

The concept of sprung and unsprung weight has so far remained outside of this discussion, but comes into play when speeds pick up, according to Zinn. 'On a descent, and if the road is quite rough – which is more likely on a mountain bike – the weight of the bottle is better off on your back, because of the extra suspension afforded by you, the rider,' he says. A bottle held tightly in the frame by contrast would be forced to move with every bump in the road, costing energy. 'And then there's the issue of when the bottle isn't full. You'll lose energy through friction of all that sloshing,' Zinn says.

So it seems the science on this subject, like the original story about Anquetil that inspired it, is inconclusive. But if it gives you a psychological edge, it might be worth a try... ☀





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Eneco Tour

Roaming through Belgium and the Netherlands, this week-long stage race is perfect for fans of the one-day Classics who are in need of a fix
Words ELLIS BACON Photography KRISTOF RAMON



ost races with a title sponsor would do anything to keep that patron sweet – with the Holy Grail being fans and the media referring to the event by its full, sponsor-backed name. The Amstel Gold Race (see p152) is a good example of an event where the sponsor's name has become an inherent part of the race title. The Eneco Tour is another.

First named the Eneco Tour in 2005 – Eneco is a Dutch multinational energy supplier – this Dutch-Belgian stage race is essentially a new version of the now defunct Tour of the Netherlands, which began life back in 1948.

Fans often associate this part of the world exclusively with the one-day Classics, mostly held in the spring. The UCI, however, has granted the Eneco Tour its top-tier WorldTour-level status, meaning the race attracts the great and the good of pro bike racing, many of

The details

What Eneco Tour

When Sunday 9th August – Sunday 16th August 2015

Where Bolsward, Netherlands to Geraardsbergen, Belgium

Distance 1,121km over seven stages

First held 2005

2014 winner Tim Wellens (Bel)



Top: In the 2013 race, defending champion Lars Boom follows eventual winner Zdenek Stybar and leader Tom Dumoulin up the brutal Muur van Geraardsbergen

Above: Belgian Jelle Wallays is the last survivor of an early escape on Stage 3

Left: The peloton bridges the Gent-Brugge canal on the final stage in 2012



'It's a race that's got a bit of everything,' says Alex Dowsett. 'There are crosswinds, short bergs and cobbled climbs, and you've got to be prepared to spend time in the gutter due to the wind'

► whom come to the race 'fresh' out of the Tour de France, thanks to its mid-August calendar slot.

The race shares the same organisation team as the Tour of Belgium (or the Baloise Belgium Tour, to give that race its proper title), and has proved a success by sticking to the roads of Belgium and the Netherlands. The original idea for the Eneco Tour was to create a high-profile 'Tour of the Benelux', but so far Luxembourg hasn't actually featured on the route.

'It's a race that's got a bit of everything,' Movistar's Alex Dowsett tells *Cyclist*. 'Well, there are no mountains, but there are crosswinds, short bergs and cobbled climbs, and you've got to be prepared to spend time in the gutter due to the wind. And there's a time-trial stage as well. So it's a race that suits a Classics-style rider, but one that is quite versatile too. I've often heard it described as being a mixture of the Tour of Flanders, Liège-Bastogne-Liège and Amstel Gold.'

Two riders have won the race twice – Spain's José Iván Gutiérrez (winner in 2007 and 2008) and Norwegian Edvald Boasson Hagen, formerly of Team Sky and now with MTN-Qhubeka, who won the race in 2009 and 2011 thanks to his combination of sprinting, climbing and time-trialling abilities.

It's a race for the true all-rounder, and one at which Dowsett has had mixed fortunes.

'In 2013 I hit some road furniture, dislocating my thumb and taking a load

of skin off the other thumb. It meant I couldn't hold on to my handlebars after that, which wasn't ideal at all,' he says. 'I'm not a massive fan of racing in Belgium at the moment if I'm honest, as I've had some nasty crashes there. I need to get my confidence back there to start enjoying it again. My dad reckons all I need is a good result in Belgium and then I'll love it again.'

But Dowsett, who in May set a new Hour record (subsequently beaten by compatriot Bradley Wiggins in June), and followed it up with a stage win and the overall honours at the Bayern Rundfahrt in Germany just a couple of weeks later, is the kind of rider capable of adding the Eneco Tour to his palmarès. That's because the time-trial stage that features on the route each year often goes a long way to deciding the final outcome of the race, plus bonus seconds at the intermediate sprints can also be key.

'I was in a position to go for a sprint last year so went for it, knowing that at some point down the line you might be in a position where those two seconds could make a big difference,' says Dowsett.

In 2014, Dutchman Tom Dumoulin took the win in the time-trial on Stage 3 (Dowsett finished 15th, just 24 seconds off the pace), and moved into the overall race lead a couple of days later.

But it was an audacious attack and a lone stage win by Tim Wellens on Stage 6 that gave the Lotto-Belisol rider the leader's white ◉



The peloton crosses the Dutch Dikes on the 187km Stage 3 from Oosterhout to Brouwersdam in 2013

Below, from left to right: Philippe Gilbert on La Redoute, which hits 22%; Raymond Kreder charging back to the peloton after a mechanical; Sylvain Chavanel in 2012







Young Belgian Tim Wellens celebrates his first-ever win, taking the penultimate stage in 2014. He took the lead and held on to win the race

'You don't get many pure climbers, but thanks to it being a WorldTour event you get a lot of the big names, who are flying after the Tour de France'

Cjersey, and which decided the race, with Wellens becoming the race's first Belgian winner.

Against the wall

The 2015 race starts in the Netherlands, in Bolsward, and finishes in Belgium, in Geraardsbergen, a place familiar to many as the site of the climb of the Muur van Geraardsbergen (known as the Mur de Grammont in French), which used to feature on the route of the Tour of Flanders. Course changes to the Flanders one-day Classic meant the Muur van Geraardsbergen being dropped from that race in recent years, although it was agreed that the Eneco Tour would use the climb instead, and last year BMC rider Greg Van Avermaet tamed the cobbled climb to win Stage 5.

With the climb set to feature as the finale of the seventh and final stage of this year's Eneco Tour, the title could come right down to the wire as the favourites scramble to be first to the top.

The lack of climbs elsewhere on the route means that this is a stage race with no King of the Mountains prize or jersey, although there is a black jersey for the leader of the combativity competition for the most aggressive rider.

'You don't really get many pure climbers coming to the race,' says Dowsett. 'But thanks to it being a WorldTour event you still get a lot of the big names, who are flying after the Tour de France – riders like Van Avermaet, Lars Boom and Sep Vanmarcke – and who have targeted Eneco specifically.'

The Tour de France finishes just a few weeks before, giving such riders enough time to have a bit of a rest, but without having lost the storming form that three weeks of racing (usually) gives you.

'It attracts a lot of strong riders,' continues Dowsett, 'so much so that it's difficult at the pre-race team meetings to name who the threats are, because every team comes with riders capable of winning.' It's one to watch. *

Watching brief

See it on TV

As usual it's Eurosport you should look to for coverage of the Eneco Tour, which will be aired live every day. The race has a decent, up-to-date website too, where you can find all the latest updates. Visit enecotour.com to keep up with proceedings.

Best bit

Don't miss the final stage between St Pieters-Leeuw and Geraardsbergen, which should provide fireworks – especially if the battle for the overall honours is still tight, which it should be.

The climb of the Muur van Geraardsbergen right at the end of the race could decide the outcome, so if you're looking for a late-summer trip to Belgium (it's lovely at this time of year) or just a lazy Sunday date with your settee, this will be the must-watch stage.

Who to put your money on

Why not take a tip from Movistar's Alex Dowsett and have a flutter on Lars Boom or Sep Vanmarcke? Dowsett himself would have been a real contender for the fourth-stage time-trial, but won't be at the race this year due to a prior commitment as best man at a mate's wedding. Both are racing in the Tour, and could come out of France on flying form over the kind of terrain they're used to setting alight in March and April.

Prices on BMC's Greg Van Avermaet should also be worth a look: the Belgian won the stage to Geraardsbergen at last year's race, and should therefore be in with a shout for the stage win there on the final day, which could also be enough to clinch him overall honours if things are still close.



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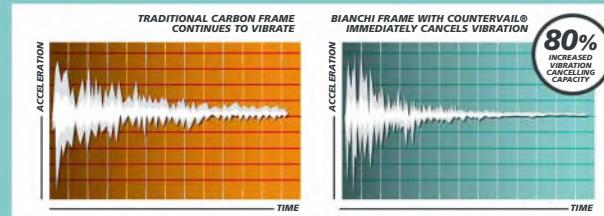
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It's different for gels

They're standard fare for cyclists, but what are gels and just how much do you need them?

Words MICHAEL DONLEVY Photography HENRY CARTER



Energy gels have long been known for causing upset stomachs, but these days many contain ingredients that help absorption so you don't get cramps

Inhabiting a grey area between drink and food, gels are sticky, squidgy and slimy, and not always the most appetising of energy sources.

'Fundamentally it's carbohydrate in a small pack,' says Greg Whyte, professor of applied sport and exercise science at Liverpool John Moores University. 'There are 100–150 calories in a mouthful that increase energy availability, raise blood sugar levels and help stop muscle damage and fatigue.'

The benefits are obvious, but gels are also about convenience. 'Rice cakes and bananas are great on the bike, but when you're climbing, trying to break away or chase someone down in a race it's harder to eat solid food,' says Mayur Ranchordas, senior lecturer in sport and exercise nutrition and physiology at Sheffield Hallam University.

Carb overload

Gels contain a mix of carbs and the most common ingredients are glucose and maltodextrin. 'Others also have fructose, which is absorbed via different routes in the gut so they don't compete with each other, meaning you can absorb more,' says sports nutritionist Drew Price. 'Some gels add palatinose, a more complex carb that gives sustained energy. And others have brown rice syrup or apple juice – again basically glucose, or glucose and fructose.'

But that's not all, because many gels have been developed to contain more than just carbs, even if these additives are in relatively small quantities. 'Most gels, like sports drinks, now contain electrolytes to help replace sodium lost through sweat,' says Price. 'They also help the absorption of carbs in the gut to avoid the gastric problems that some people can suffer with gels.'

This can be a common problem, especially if you're not used to them. 'Long-chain sugars such as those in pasta and rice have a low GI, so provide sustained energy over a longer period,' says Whyte. 'The simple sugars in gels have a high GI and can overload the stomach, which can cause cramps and diarrhoea.' The key is to try them in training and see what works for you.

Some newer gels contain amino acids and protein. This is a twist on

'If you're doing, say, a 10-mile time-trial you can use the gel as a rinse. Swill it around your mouth, spit it out and you'll get some of the benefit without the risk of gastric distress'

© previous thinking that protein should be avoided because it slows absorption. 'Research shows proteins and specific amino acids can protect muscle protein, aid in fuelling and also reduce stress and fatigue,' says Price. 'They trigger muscle protein synthesis or get used as another way to generate energy when under physical stress.'

Instant results

'How quickly it works depends on the gel, how fuelled you are to begin with, how much power you're laying down and also other factors such as how much water you take on,' says Price. 'Not drinking enough water will slow stomach emptying, so the gel sits in the stomach – and this is also why nausea can be associated with gel use. It can take anywhere from 20 minutes to an hour to work.'

So the key is stay well hydrated by drinking little and often. 'Water is absorbed better in small sips,' says Ranchordas. 'You're better off drinking 200–300ml every 20 minutes than downing a litre on the hour, every hour.'

Better news is that the gel's effect can actually be instantaneous. 'Your

body feels the benefit as soon as you put a carb solution in your mouth,' says Nigel Mitchell, head of nutrition at Team Sky. 'Your body anticipates the carbs and gears up for it. This has an immediate impact on performance.'

How long the gel lasts is also an inexact science, but the parameters are somewhat smaller. 'You can't be precise because everyone is different,' says Mitchell. 'But 20–30g of carbs will sustain a 70kg athlete at race pace for 20–30 minutes.'

You don't even have to swallow them. 'If you're doing, say, a 10-mile time-trial you can use the gel as a rinse,' says Ranchordas. 'Swill it around your mouth, spit it out and you'll get some of the benefit without the risk of gastric distress.'

Timing is everything

One thing you'll see before any sportive or long race is competitors necking gels at the start line. This is a mistake.

'Generally, you shouldn't take energy gels before the last hour of an event,' warns coach Ian Goodhew. 'If you start taking them early you have to keep taking them or you'll fall off the cliff'

[nutritionally speaking]. You can probably get away with taking two or three in the last hour, but bear in mind the liquid gets through the system quickly so you feel hungry, even though you've put energy in your system. There's a trade-off with gels so they have to be used sparingly.'

If you don't want to bonk – that point where your glycogen reserves run low and it feels like your legs have turned to jelly – you have to be sensible about nutrition and employ a range of tactics. 'On a two-hour ride you can have a couple of bananas,' says Mitchell. 'But if you're in a chain gang on the rivet or doing a 50-mile time-trial, you'll need more energy – and it can't all come from gels.'

'Eat what you like before the race,' says Goodhew. 'Have a big breakfast – remember you're not a pro. Take two bottles of water and/or energy drink, and eat a bar every hour, or half a bar every half hour if you can't stomach it all in one go. These take longer to digest than gels so you won't fall off that cliff. You can also take caffeine gels, which are an accelerant. It can be OK to use a gel if you know there's a big climb coming up, but plan ahead – don't wait until the bottom of the climb to have it because you won't get the benefit until it's too late – and have a bar afterwards to keep your energy levels topped up. Ultimately, it's all about practice. Training in a fasted state is all very well, but you have to practise race-day nutrition until you get it right.' ☀





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Sweat talking

It may seem like nothing more than the soggy byproduct of an intense workout, but knowing the content of your sweat can improve your performance on the bike

Words STU BOWERS Photography GEOFF WAUGH



I can't decide if I feel relieved or short-changed. Andy Blow, founder of Precision Hydration, is preparing me for today's sweat analysis test and informs me it involves no physical exertion. Usually when *Cyclist* gets involved in a Lab Rat test, it ends up with us gasping for breath while slumped over a turbo trainer but, as Blow tells me, I can do this test sitting down in my jeans and t-shirt.

'But surely I need to be sweating?' I ask, slightly baffled. 'Don't worry, you will,' Blow insists with a smile, as he finishes setting up what looks like a lie detector in front of me.

The easy option

'The test uses a process called iontophoresis,' Blow says. 'It's basically a non-invasive way to get a chemical or a drug into your system, below the skin. At the most aggressive end of the spectrum is an injection, and the other end is a rub-on cream. This is somewhere in between and very effective, using a mild electrical current to deposit the chemical's positively charged ions under the skin. The body's response is that the sweat glands elicit a maximal sweating response. So

Cyclist is fitted with electrodes that elicit a maximal sweat response



directly under the pad you're sweating as if you're working as hard as you can in very hot conditions, without you even moving a muscle. Quite clever really.'

I can't deny it sounds ingenious, although I'm still a bit disappointed I won't be getting a workout. But Blow assures me this is the most effective method of collecting clean sweat samples without contamination, something that would prove very tricky during exercise.

He cleans the surface of my skin with de-ionised water to remove residual deposits from previous sweating or any other contaminants. With the electrodes in position, all I have to do is sit tight for five minutes. Let the sweat-fest begin.

The only thing I'm aware of is a slight tingling, a sensation like pins and needles. 'Now for the clever part,' says Blow, once the five minutes is up. He places a tiny disc directly over the

spot where the positive electrode and chemical (pilocarpine) was located. Inside is a tiny coil of tubing that will draw up, via capillary action, a sample of my sweat. I watch it creep up the tube, appearing pale blue in colour due to a food dye used to make it more visible.

'And that's pretty much it,' says Blow moments later, as he verifies there's now enough of my sweat in the tube to run the analysis.

Your number's up

The analyser measures the electrical conductivity of the sample, because electrolytes in sweat (mainly sodium) affect this significantly. The software then turns this into meaningful data.

'We're focusing on the sodium content,' says Blow. 'You have lots of electrolytes in your system, but in your blood in particular. Blood is where your sweat comes from and sodium is the



Cyclist's results reveal a high level of sodium, meaning a tailored hydration strategy might be helpful

Blow also suggests people's understanding of electrolyte replacement is often limited. An example of this is coconut water, which has recently been marketed as an ideal electrolyte replacement drink, but it contains very little sodium and a lot of potassium. So if you're a high sodium sweater you could drink all the coconut water you like, but you won't be replacing much of what you need.

My sample shows a sodium content of 78Mmol – not super high, but definitely in the higher part of the scale. This equates to a sodium loss through sweat of 1,576mg sodium per litre. I'm well over the average which, combined with the fact I'm also a regular



'In the heat, an athlete could easily expect to lose a litre of sweat per hour, and that's conservative. Losses of up to three litres have been recorded'

sweats lots and regularly (ie, they train a lot) with high sweat sodium content. That's the triple whammy that can lead to issues, and it's this group – which is around 20% of the 3,000 athletes in our database – that can benefit most from a more carefully considered electrolyte replacement strategy. Others can benefit too, but on a sliding scale depending on the variables. Generally the telltale signs are when the skin or clothing are caked in salt after exercise, muscle cramps, salt cravings and a general feeling of struggling in the heat.'

sweater, through frequent training and competing, puts me into the category Blow feels can benefit most from a more considered replacement strategy, or even some sodium pre-loading (see box on page 56) prior to hot events.

'Training or competing in the heat, an athlete could easily expect to lose a litre of sweat per hour, and that's conservative. Losses of up to three litres an hour have been seen in research,' Blow says. 'If the event time is also long then the sodium losses are potentially massive.' ☈

C predominant electrolyte. We apply a correction factor in the software to account for the presence of the other electrolytes. 10Mmol of sodium per litre of sweat would be really low; 100Mmol would be very high. The average we see is around 40–45Mmol.'

The whole point of the analysis is to help determine if a rider would benefit from taking on more or less electrolytes, based on how much they sweat and how salty their sweat is. Blow says, 'There are people who sweat a high concentration of electrolytes but don't sweat that much, so they may not have an immediate need to replace their losses, as they'll be able to replace it through food. The high-risk group

Hydration 101

Sound advice from Precision Hydration's Andy Blow

1. Don't overload on water

Glugging litres of water before an event is a common mistake that can actually hinder rather than aid performance. For hot and long races consider sodium pre-loading if you're worried about high levels of fluid loss (see box on p56).

2. Check your sweat

Electrolytes matter most when sweat loss is high and if you are susceptible to high levels of salt loss. If you're regularly caked in salt, suffer cramps, crave salty food or get episodes of low blood pressure after training, or just underperform in the heat, these are all indicators that you might benefit from more sodium replacement. Consider getting sweat tested or just use trial and error in training sessions with some higher sodium content.

3. Don't worry about short events

If your training session or event lasts for less than 60–90 minutes, you don't need to take on electrolyte tabs or sports drinks during the event unless the temperatures are very high.

4. Don't copy the hydration strategies of others

Everyone's physiology is unique, so figuring out what works for you should be your priority. Follow a set plan and adjust it as necessary.

5. Monitor your hydration

Check the colour and frequency of your pee and assess how thirsty you are. Dark urine indicates you need to drink more, while very clear urine can be a sign you're overdoing it. Aim to stay somewhere between the two.



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'Sodium replacement is not a performance enhancement – the best you can hope for is not to experience a performance drop-off'

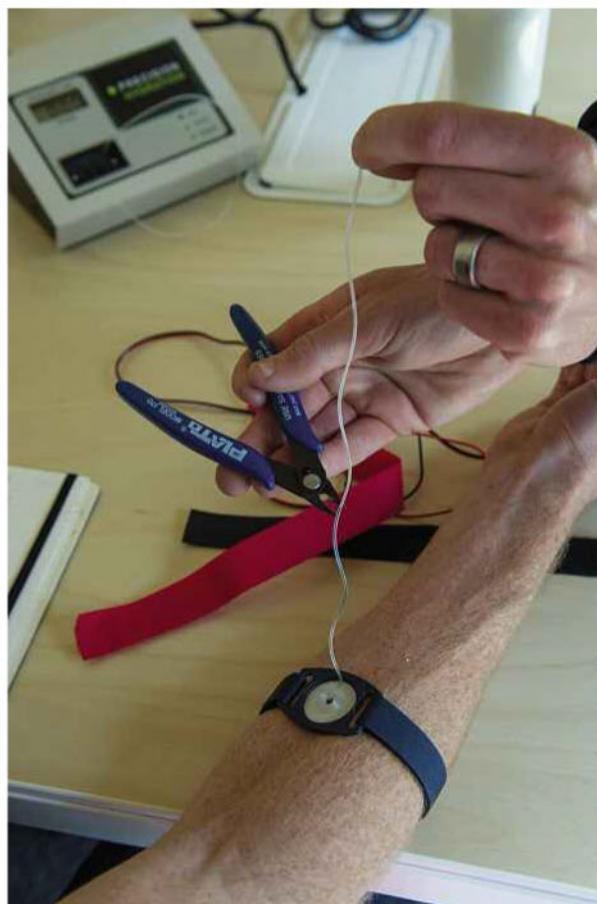
I ask Blow if the high sodium content of sweat is potentially a knock-on effect from having a high salt content in your diet? 'Concentration of sodium [in sweat] is predominantly genetically determined,' he replies. 'From our tests and experience with athletes it's usually more the case that they have salt cravings as a result of high sodium losses, hence they add salt to food, not the other way around.'

So I should be considering a higher dose of sodium? 'Your results certainly would point to that,' Blow suggests. 'If you were doing long rides in hot conditions you would be exposed to high risk and an inevitable effect on your performance. As you lose salt your blood volume drops, and therefore performance is compromised. Sodium replacement is not a performance enhancement – the best you can hope for is not to experience a performance drop-off. It boils down to trying to maintain your body's homeostasis.'

Keeping tabs on salt

Most off-the-shelf electrolyte tablets deliver around 400–500mg of sodium, which is unlikely to be enough to replace my losses. Blow recommends I increase the sodium dose in my electrolyte drinks, but also warns me not to rely solely on the test numbers.

'You have to be very careful not to completely outsource all the responsibility to science,' he says. 'It's often considered as a "white knight" approach, claiming to have all the answers, but you still have to go out in the real world and find out if you see actual benefits. What we are trying to do is narrow down the playing field, but there's still some trial and error. It's a bit like a bike fit – you can apply the science but you still need to make



sure this translates to the right level of performance out on the road.

'The test enables us to prescribe a more suitable programme of electrolyte supplementation and help you achieve a greater understanding of how your personal hydration strategy works.'

For me, that means making some changes to my approach to exercise in the heat – and I certainly won't be shying away from the salt mill next time I feel the urge to add a few shakes to my meal. 

Sodium pre-loading

Get your salt in early

Strategies such as carb pre-loading in preparation for arduous events are well known, and Precision Hydration's Andy Blow suggests the same can work for sodium pre-loading.

'It's a very specific strategy pros have started using for high-intensity events in the heat, where there may be limited opportunities to drink, such as time-trials,' he says. 'Drinking too much water actually dilutes your body's electrolyte content, but by contrast a controlled sodium intake will result in blood plasma volume expansion, which will equally stave off the effects of dehydration, and is potentially a valid way of increasing performance.'

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The long and short of it

Crank arms are pretty crucial to making your bike move forward, so should you be paying more attention to their length?

Words PETER STUART Photography HENRY CARTER

Some changes in bike set-up are quick and free. It costs nothing to tweak saddle height or adjust a handlebar, but changing the length of your crank arms is a more costly and time-consuming business. Perhaps it's odd, then, that the length of crank arms is rarely a factor when deciding which bike to buy. Chances are you simply accept whatever crank arms come with your new bike, even in these days of marginal gains and millimetre-perfect bike fits.

Back in the days of the penny-farthing, the length of the crank was the only thing controlling resistance. The introduction of the chain and sprocket changed the game, and the development of gears made the crank's role in controlling overall resistance negligible. These days, the options for crank length are limited. For an average after-market groupset, the choice will generally be between 170mm and 175mm crank arms, with occasional options to go down to 165mm or up to 180mm.

We asked both Shimano and Sram why they manufactured crank lengths in this range, but neither could offer any scientific reason, other than that's what customers ask for.

'We offer crank arms from 165mm to 177.5mm to cover all needs but, in terms of which crank arm length should be used on a specific frame, it's the bike manufacturer's decision,' says Geraldine Bergeron of Sram. Tim Gerrits from Shimano responded similarly: 'Basically what Shimano does is produce what is asked for by our customers. Most manufacturers and consumers choose, or need, a crank between 170mm and 175mm.' So it seems that it isn't component manufacturers that decide on crank lengths, but the bike brands.

'Optimally, every rider would go through a Precision Fit and have their bike perfectly fitted for them,' says

Ben Coates, road product manager at Trek, and the man who decides which components go on which bikes. 'Every rider is an individual and biomorphically different, which basically means there is no way to ensure proper crank length for every rider on every size.'

Coates argues that the way around the challenges of anatomically diverse customers is by using shorter crank arms. 'We actually know from fit data and dealer feedback what size is the most effective for each size bike to work for the biggest segment of riders that would ride that bike,' he says. 'In the case of crank arms, we want to spec the length that will work for the most riders on each size, which usually means the shortest possible crank that is appropriate.'

Giant, similarly, has used a wide set of fit data to get crank lengths that will be broadly appropriate to each size of bike. David Ward, product manager at Giant, says, 'It's based on the body proportional data that we have collected. I can't remember the last time we had a dealer or consumer query the crank length, so it appears that we've got it right.'

But with people eagerly switching stem lengths, handlebars and saddle position, surely the crank length can't always be correct on arrival?

Power down

Crank arms don't affect your power delivery. Back in issue 15, we investigated why. Of course, a longer lever creates more torque, which is directly related to power, but cadence is the key variable. If you have a longer lever, it takes longer to cover the same distance. Power is a function of torque and cadence, so while the torque may be higher with a longer crank arm, the cadence will be lower and the power will remain about the same. It's an area that gets complex, but the most in-depth and highly cited study on the subject has shown that within a range of 110–220mm crank arms,





► a rider's maximum power output is not seriously affected.

'Crank lengths of 145, 170 and 195mm made no difference for top-end power delivery,' says the author of the study, Dr Jim Martin. 'If you consider overall ratio – how much your leg moves relative to the tyre – then what's really important is the gear ratio. Crank lengths, even of drastic difference in length, actually create only a small range of difference in overall gearing.'

A shorter crank may not sacrifice power in a mechanical way, but it does surely alter how your body interacts with the system biomechanically. As Dr Auriel Forrester, analyst and coach with SRM (scientific-coaching.com), says, 'You can only produce effective power when you go through the functional range.' Go beyond that range with too long a crank and you will not produce power effectively as you'll be

'You are almost certainly riding with cranks that are too long,' argues Mike Burrows. 'And I'm not talking about 2mm – more like 25mm'

straining joints and making demands on flexibility. But equally if a crank is too short, Forrester says, 'The rider will not have time to generate enough torque.' So for optimum efficiency and power over time, length is important.

So as we alluded to, the power differences from changing crank lengths are minimal and the cost and effort is considerable. 'I raced on everything from 165mm on the track to experimenting time-trialling with 180s,' says bike fitter Ben Hallam of Bespoke Cycles. 'But I never really saw the gains, and now I'm heading back to shorter cranks for everything.'

The question remains though, should you be going shorter?

Back to front

There are several benefits to shortening the cranks. As longer cranks increase the circumference of the pedalling circle, it puts more strain on all the extremities of the pedal stroke. That means that at the top of the stroke the pedal can force the hip and knee into too tight an angle, straining the joints.

While some of these problems of long cranks can be worked around with fit adjustments, such as changing saddle position, there are limits. For instance, if a crank is 1cm too long, moving the saddle forward or up by that amount will adjust the knee angle at the centre or top of the stroke, but it will mean the rear foot is 2cm further back at the back of the stroke, leaving the ankle too flexed at the bottom of the stroke.

'If you go from a 170 to 180, the crank is only 1cm longer but the circumference is increased by more than 3cm and your back leg is 2cm further back,' Forrester elaborates. 'It can result in further problems in the hip because you're having to move your leg so far back.'

For many, going for smaller cranks can alleviate the strain created by poor flexibility or muscular imbalances that may otherwise take a great deal of adjustment to the wider bike fit

to achieve. If the range of motion is smaller, many of the strains are less.

'I think crank length should vary more on stock bikes,' says Hallam. 'For frame sizes between 52cm and 58cm, the cranks are generally appropriate, but when we're getting into the 50cm range and below it would be nice to see more 165 and 167.5mm cranks as standard. Just as on the bigger bikes you could get away with going longer. We're seeing more of that from the American brands.'

There are also more dramatic theories surrounding crank lengths. 'You are almost certainly riding with cranks that are too long,' argues Mike Burrows, engineer and the designer of Chris Boardman's Lotus bike. 'And I'm not talking about 2mm – more like 25mm.' Burrows suggests that 145mm cranks are likely to be optimal, and having tried them ourselves with no noticeable penalties when riding on the flat, we think he could be onto something.

Ultimately there is no correct answer to crank length, and your best bet is to try a few options – maybe as part of a bike fit – to see what feels best for you. ■



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In praise of... Mountains

They hurt us and expose our weaknesses, yet we are drawn to them. *Cyclist* explores the perverse attraction of big hills

Words TREVOR WARD Photography DANNY BIRD



George Mallory famously said he wanted to climb Everest 'because it was there'. His enthusiasm is in marked contrast to that of most professional cyclists when confronted by mountains.

Greg LeMond described them as 'the pinnacle of suffering'. Riders in the 1910 Tour, which included the Pyrenees for the first time, said they were being sent 'into a circle of death'. As he crested the Col d'Aubisque, eventual winner Octave Lapize called officials 'Assassins!'

But for most of us non-pros, mountains have a compelling fascination. Yes, they are a source of pain, but they are also objects of beauty, responsible for some of the most stunning images from bike racing. Just take a look at Les Lacets de Montvernier in this issue's Big Ride (p82).

And by 'mountain', I don't mean hill reps. That's pain for pain's sake. I mean a big lump of billion-year-old granite or limestone with at least 1,000 metres in height gain and a road that actually takes you somewhere. Ventoux, Galibier and Stelvio are names that readily spring to mind. And that's the first reason I love

them – riding up a mountain usually means you're somewhere foreign, beautiful and warm.

It also means you'll find a camaraderie that you won't find at sea level. The suffering and sense of achievement is universal between riders speaking different languages. And the euphoria is heightened by the significance of the location, both in terms of geography and history.

An impromptu re-enactment of the 2000 Armstrong-Pantani duel up the final ramp of Ventoux with a 64-year-old veteran from Holland (I gifted him the win, obviously) has stayed in my mind a lot longer than any Sunday morning club run. Similarly, my ride across the plateau of Teide with Bjarke from Denmark after a 40km climb was unforgettable, as much for us trying (and failing) to latch on to the wheel of Vincenzo Nibali as each other's company and the spectacular scenery.

Peak of terror

Man's obsession with mountains wasn't always so. Three centuries ago, they were regarded as repellent monstrosities and referred to as 'boils',

Throughout history mountains were seen as inconvenient and even repellent. It is only modern man who has seen them as a challenge

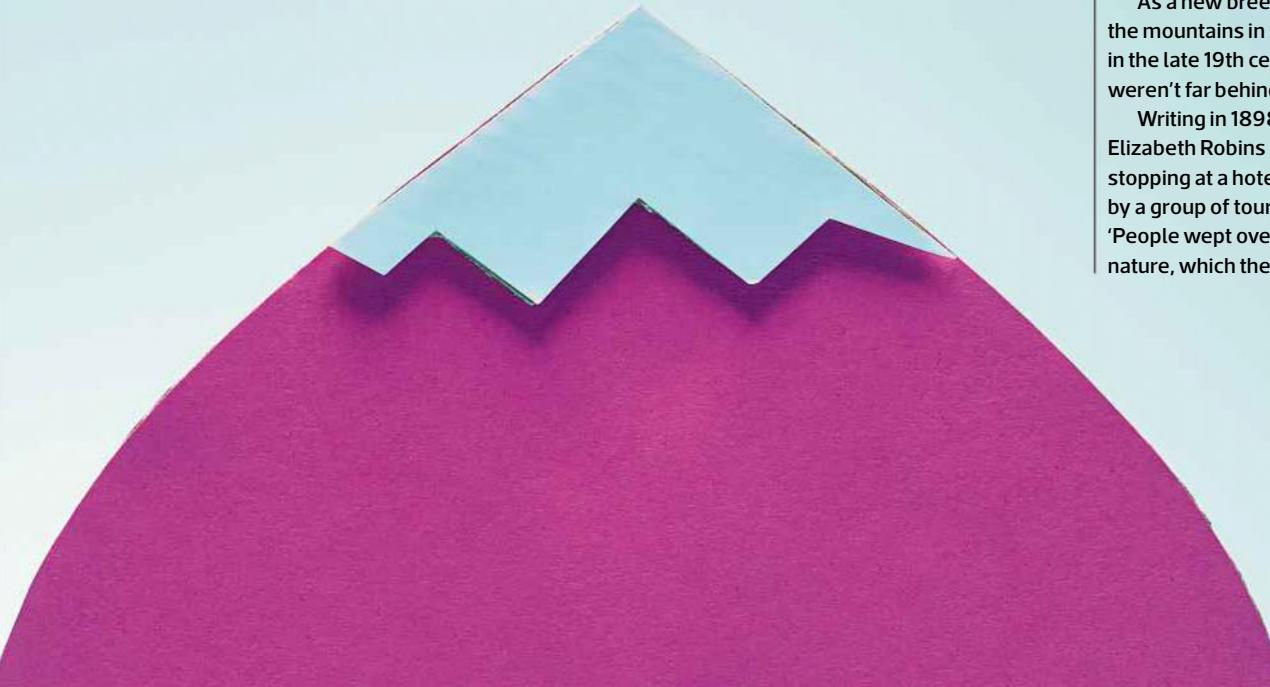
'warts' and 'excrescences', writes Robert Macfarlane in *Mountains Of The Mind*. Travellers crossing the Alps in the 18th century often went blindfolded to avoid 'being terrified by the appearance of the peaks'. People – probably including the Marcel Kittels of the day – preferred the sedate landscapes of orchards, meadows and farmland.

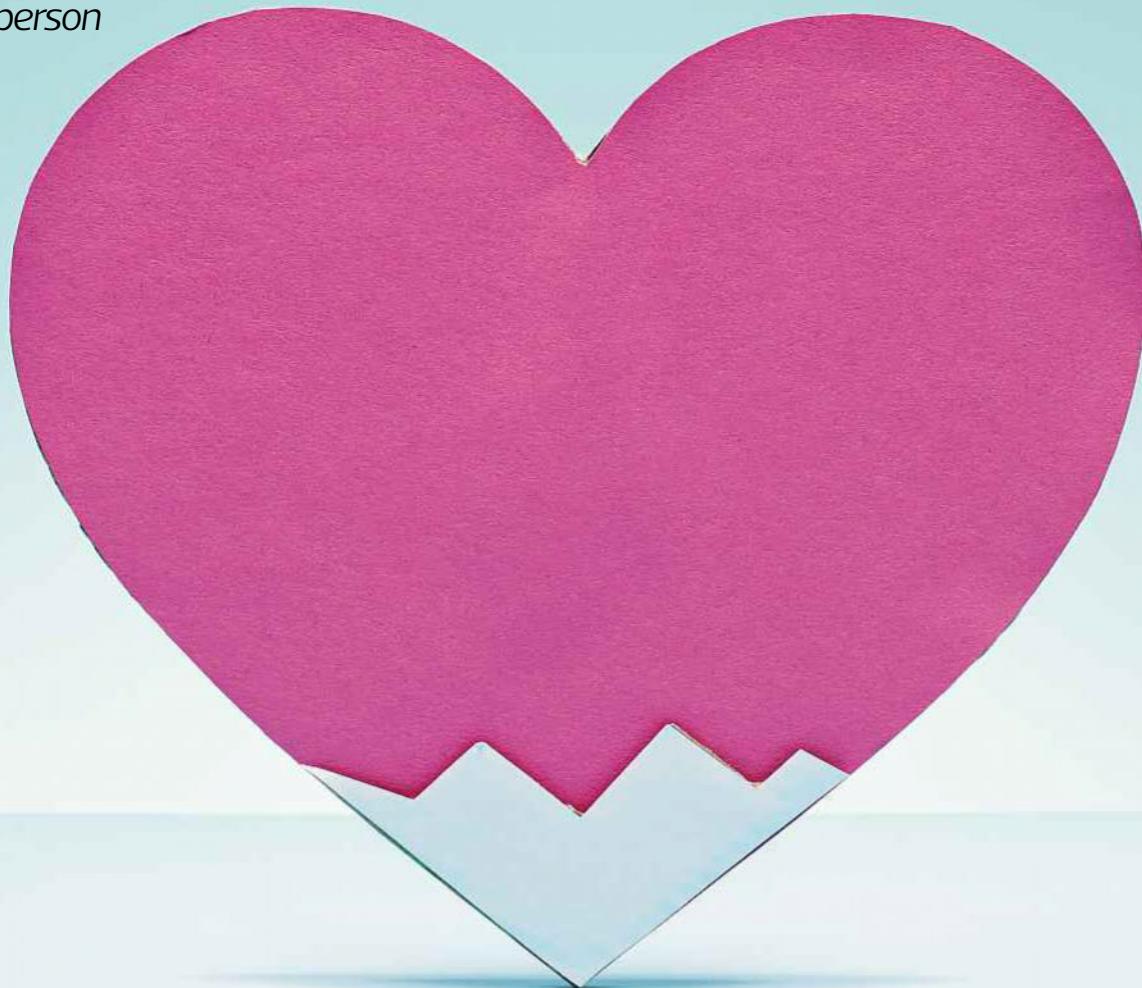
But all that changed when travellers discovered the thrill of exposing themselves to danger and finding pleasure in fear – a doctrine known as the 'sublime'. Macfarlane writes, 'If you came just near enough to a waterfall or cliff-edge to suggest to your imagination the possibility of self-destruction, then you would feel a sublime rush. It was the suggestion of harm, melded with the knowledge that no harm was likely to come, which induced this delightful terror.'

Admittedly, grinding up a 20km climb may not feel like a 'sublime rush' – that's probably a more apt description for the descent down the other side – but 'the possibility of self-destruction' is a sensation most of us have probably been familiar with as we run out of gears and gels on a 20% slope.

As a new breed of traveller flocked to the mountains in search of the sublime in the late 19th century, the first cyclists weren't far behind.

Writing in 1898, American rider Elizabeth Robins Pennell recalled stopping at a hotel and being engulfed by a group of tourists buying postcards: 'People wept over the sublimities of nature, which they could not see for □'





► their tears; now they turn their backs upon the spectacle and let their feelings loose upon illustrated postcards.'

This phenomenon has echoed down the centuries. I once rode to the top of the Giau in Italy and found the restaurant full of motorcyclists buying postcards and congratulating each other on completing the 10km climb with a 1,000cc engine between their legs. I, meanwhile, pulled a leftover breakfast croissant from my back pocket, went outside and savoured the views.

The dream of Eros Poli

Former pro Eros Poli compares conquering a mountain to 'being like Rocky on top of the town hall steps'. In 1994, Poli, a muscular 83kg lead out man for Mario Cipollini, famously won a stage of the Tour de France by beating 60kg Marco Pantani and other featherlight climbers over the top of Ventoux. During a recent ride with him in the Dolomites, Poli told me, 'I always got dropped on the mountains. Even the *tifosi* couldn't help me by pushing me. They said, "Sorry Eros, you're too

I love cycling up mountains for the pleasure of the scenery rather than the pain of the climb, but acknowledge the latter as the price I have to pay for the former

Former pro Eros Poli was, at 83kg, not a natural climber, yet he once won a stage of the Tour de France up Ventoux. 'A mountain is bigger than any rider, but it is possible for you to beat it,' he says

heavy.' So for me to be first to the top was a dream. And that's the beauty of cycling. A mountain is bigger than any rider, but it is possible for you to beat it.'

Fergus Grant is a cyclist who knows the mountains of Europe better than most. As lantern rouge of the Haute Route sportives – billed as 'the highest and toughest in the world' – it's his job to encourage and motivate riders in danger of missing the cut-off times during the week-long stage races through the Alps, Pyrenees and Dolomites.

'The attraction of the mountains for me when I moved to France 20 years ago was the scenery, the challenge of getting to the top and the sense of achievement. But now there is much more masochism involved,' he says. 'You see this difference with any group of cyclists we get here for training in the summer: the newbies don't really enjoy the suffering, they get pleasure from

the new experience of beautiful terrain to cycle in, while the more experienced get their kick from getting better and better and hurting themselves.'

I love cycling up mountains for the pleasure of the scenery rather than the pain of the climb, but acknowledge the latter as the price I have to pay for the former. Some riders measure their enjoyment in kilometres and watts. If Strava had been around in Elizabeth Robins Pennell's day, she'd have swept up all the QoMs: 'Some people may object we rode too fast. But we had not come out to play the enthusiast and record our emotions on postcards. We had come to ride over the Alps.'

I, however, prefer to measure my pleasure in sights and memories. And when the going gets particularly tough, I take solace in the familiar mantra of the gravity-challenged rider: there's only one way down – and that's up. ♦



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The long weekend

Audax may seem an eccentric niche, but as *Cyclist* finds on the 624km Windsor-Chester-Windsor ride, it offers a rich blend of history and adventure
Words DAVID KENNING
Photography JAMES OATEN



Riding a bike from Windsor in Berkshire to Chester in Cheshire and back again in the same weekend sounds

just a tiny bit crazy. That, however, is exactly what I'm intending to do as I join around 140 other riders at Old Windsor Memorial Hall on a Saturday morning in late May for the Windsor-Chester-Windsor 600km audax.

Audax may lack the high profile and glamour of racing, or the mass appeal of sportives, but it's a corner of the cycling world that has been quietly ploughing its furrow for around 125 years. Like time-trials, it's a niche interest whose participants are viewed by other cyclists with a mixture of admiration and suspicion. It lies somewhere on the cycling spectrum between sportives and touring, and while it emphatically isn't a race, there is a time limit – in this case, 40 hours for a ride that clocks up 624km – a little over the distance in its title.

The 2015 calendar of Audax UK, the governing body of long-distance cycling in the UK, lists 16 events of 600km. Windsor-Chester-Windsor may not be the prettiest – that would be the Bryan Chapman Memorial 600, a there-and-back route between Chepstow in South Wales and Anglesey in the north, via the magnificent scenery of Snowdonia. Nor is it the most difficult – that's the Pendle 600, which takes in the Pennines, North York Moors and Lake District, with more than 10,000 metres of climbing. It is, however, the most historically significant. Established in 1976, the original Windsor-Chester-Windsor was set up to enable British riders to qualify for the 1,200km Paris-Brest-Paris.



The details

If you like the sound of riding all day and all night...

What Windsor-Chester-Windsor audax

Where Windsor, Berks
When The next event isn't until 2019 (to coincide with Paris-Brest-Paris). The 1,400km London-Edinburgh-London audax is planned for 2017.

Price £30 (2015 fee)
Sign up audaxweb.net



© (PBP), the flagship event of the international audax calendar.

The roots of PBP go back to the mid-1880s, when Maurice Martin, founder of the French cycling newspaper *Véloce-Sport*, invented a new type of long-distance cycling event. Known as a 'brevet' (certificate) after the card that riders carried to be stamped at control points on the route as proof of passage, the challenge was to complete extreme distances within a time limit but in a non-competitive spirit. The term audax, from the Latin for 'bold', defines a slightly different type of event invented in Italy around the same time, in which teams of riders complete a fixed distance at a set pace, led by a road captain. Audax is the term that has stuck in the UK, though brevet is still preferred elsewhere.

It's no coincidence that many early brevets were sponsored by newspapers – coverage boosted sales enormously. In 1891, Pierre Giffard, editor of *Le Petit Journal*, organised the first Bordeaux-Paris brevet (560km), which proved such a success he put on a bigger event

a struggle, but the rewards for sticking your neck out are commensurate. I've made some lasting friendships and had some amazing experiences. The Bryan Chapman Memorial is one of the most fantastic rides I've ever done,' he adds.

We set off from Windsor in two groups, the first at 6am and mine at 7.30am. Riding with the bunch for the opening few miles, I soon hear a beep from my handlebars to warn me of a missed turn. Unlike a sportive, an audax isn't signposted, so today I'm using my Garmin, although many audaxers still prefer to stick to the traditional printed routesheet taped to the handlebars.

The original Windsor-Chester-Windsor route was a functional bash along main roads, and died out by 1991 due to a combination of increasing traffic levels and an expanding calendar of events that offered more attractive alternatives. Revived last year, the new incarnation sticks mostly to country lanes and quiet villages, though a few short stretches of main road such as the A44 are inevitable.

I soon hear a beep from my handlebars to warn me of a missed turn. Unlike a sportive, an audax isn't signposted, so today I'm using my Garmin

later the same year. And so PBP was born. Now held every four years, the next edition is this August, when an international field of up to 6,000 riders will set off from the French capital to ride to the western tip of Brittany and back inside the 90-hour time limit. These days, the entry requirement is a 'super randonneur' series of rides, comprising brevets of 200, 300, 400 and 600km, and for many of my fellow riders, today's event is the culmination of the qualifying process.

So what's the appeal?

'It's not exclusive, it's not about how fast you can go and it's a great way of seeing the British Isles,' says James Fairbank, head of marketing at Rapha, and part of a Rapha team that entered the last PBP in 2011. While some in the audax community viewed Rapha's interest as a cynical marketing exercise (it developed the Brevet jersey and gilet on the back of its involvement), you sense a genuine feeling of warmth and enthusiasm from Fairbank. 'Riding such a long way can be

'Devising a route between Windsor and Chester that kept off main roads and still came in under 630km and which is pretty was a tough challenge,' says organiser Daniel Webb. 'It took about seven full days to devise, write, ride, revise and finalise, and probably another day's worth of last-minute checks for roadworks.'

You may have heard horror stories of audax rides where participants were reduced to dining on pork pies and bottles of chocolate milk on garage forecourts and sleeping in bus shelters, but this is a different kind of ride. Webb, who also runs Audax UK's flagship London-Edinburgh-London 1,400km (next edition 2017), has booked six village halls along the route and roped in a legion of volunteers – many of them experienced audaxers themselves, all unpaid – to provide food and sleeping facilities. It's a remarkable enterprise, all the more so when you consider the modest entry fee of £30.

The first stages take us through the Chiltern Hills, skirting around Oxford



Above right: Crossing the Thames at Henley. Ensuring the route is suitably scenic can cause headaches for the organisers – but it's worth the effort

Right: The first control point at Chalgrove village hall in Oxfordshire is a typical scene





then through the quaint honey-coloured stone villages of the Cotswolds. Despite a headwind, it's a fine day for a bike ride.

The climbs aren't the biggest but I take them slowly, mindful that there's a long way to go. Pacing is an art on a ride of this length, but shortly before the second control at Weston-sub-Edge (130km), I start to catch the stragglers from the 6am start, including a team of ElliptiGO riders. These mobile elliptical trainers demonstrate that there's no such thing as a typical audax bike. Most of today's peloton is admittedly more conventional but still includes everything from vintage steel tourers with down tube shifters, mudguards and pannier racks to high-end carbon and titanium bikes.

I enjoy the ride up through Droitwich to Hartlebury and Lilleshall in the company of a fellow rider called Aidan, chatting about other rides we've done as we take in the glorious British

countryside. The only hazards on this stretch are a few lumpy bits and a couple of fords. Progress is steady but I'm falling a little behind my schedule, partly thanks to that headwind and partly due to the lavish catering at the controls. It's hard to resist the temptation to linger and stuff my face with cake at every stop. By the time we leave Lilleshall (240km), dusk is approaching, but the forecast rain is holding off. For now at least.

Preparation is king

I'm still about 30km from Chester when I feel the first spots of rain on my face, but fortunately not heavily enough to justify stopping to put my waterproofs on. Self-sufficiency is one of the key principles of audax – there are no support cars, mechanics or medics en route, so my Carradice Barley saddlebag is loaded with all the spare clothes, first aid essentials, inner tubes and tools ☺

With 500km in my legs, the rollercoaster terrain that didn't seem so bad on the outward journey now feels like hard work



► I might need for roadside repairs. Hopefully I won't need most of them.

It's also about this time that I start to encounter the headlights of the faster riders on the return leg. By the time I reach the turn point at Chester, there has already been a steady stream of riders heading in the other direction, and a steady stream of water falling from the sky. Several riders are crashed out on camp beds at one end of the hall, but I'm keen to break the back of this ride, so after filling up on food (again) and changing into my warm, weatherproof overnight gear, it's back out into the rain.

The going is tough at first, but I link up with another rider and the company takes my mind off the suffering, despite the continuing rain. Dealing with these mood swings is as much of a challenge as the physical side of such a long ride.

Just before 4am I reach the sleep stop. I hang up my wet gear to dry out and doze fitfully in the darkened hall/dormitory. When I hit the road again shortly after 6am, the rain is still falling and doesn't stop until late morning, but by the time I reach Weston again it's turning into a pleasant afternoon.

Next comes the return leg across the Cotswolds. With 500km in my legs, the rollercoaster terrain that didn't seem so bad on the outward journey now feels like hard work. The hours in the saddle are taking their toll and by the time I reach Chalgrove my left knee is complaining loudly. But with 570km completed I'm not giving up now, and before long the scent of the finish line gives me the impetus I need to put on a final spurt.

To emphasise the point that it isn't a race, publishing finishing times on audax

Above left: Riders regroup in Bletchingdon, Oxfordshire. You can stop at as many quaint English pubs as you like, so long as you make it back to Windsor within the time limit

Below: The delights served up at feed stations can keep you off the road for longer than planned

rides is strictly forbidden, so I won't reveal the time on the clock when I arrived back at the Memorial Hall. It isn't important anyway. I've made it within the time limit and that's all that counts. By now the riders are so strung out – both along the course and psychologically – that the back of the field is still some four or five hours away from Windsor, while the fastest riders returned to base several hours ago and are already well on their way home by now.

I find out later that of the 137 starters, 117 finished, 15 failed to finish and another five finished after the 11pm cut-off time. A reasonable attrition rate, showing that a ride like this pushes many cyclists to their limits, but most remain undaunted.

To demonstrate the audax spirit, I'm told that a rider using this event as his final PBP qualifier suffered a catastrophic crack in his bottom bracket around 450km into the ride, only for a fellow rider to donate his bike so he could complete his qualification. Can you imagine that happening on a sportive? ♦





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The Makers

Tim Lawson at Secret Training

For over 20 years Tim Lawson has been a pioneer of nutrition products for bike riders. He talks to *Cyclist* about his search for more energy

Words PETE MUIR Photography ALEX WRIGHT

Cyclist: When did your interest in nutrition for cyclists begin?

Tim Lawson: I did a sports science degree at Liverpool Polytechnic, which had one of the first sports science departments. I went to study there with a view to finding out how to ride a bike a bit faster. Because it was a research-based degree, it taught me where to look. It set me up for finding information in libraries. When I came out of university I had glandular fever, which put a damper on my cycling career, so I went to work for a pharmaceutical company.

Cyc: What was the thinking in sports nutrition at the time?

TL: Back then the go-to energy bar was Kendal Mint Cake. The guys at the Ribble Valley Cycling Club knew that I had a sports science degree so they would ask me to come and give talks on nutrition. Then other clubs would ask me to do talks, so I thought if I could sell a few products I might fund the effort it was taking to put these presentations together. Using my contacts in the pharmaceutical industry I got hold of a huge

tub of maltodextrin that I was then breaking down for the guys in the clubs. It was like, 'Here's your bag of white powder,' and we had some interesting stories of people trying to take this stuff abroad. Some of the stuff we were getting wasn't always very consistent, and I thought maybe we could do better ourselves, so I pulled in the rest of the family and set up a nutrition business that got quite big.

Cyc: That would be the start of SiS [Science in Sport]. Was it always a family business?

TL: My dad had taken early retirement, and he was put in charge of the business aspects of it. My mother was an Atomic Energy Authority-trained lab technician, so when we asked for something with so many millimoles of sodium, or whatever, you'd know it would come back bob-on.

Cyc: How does a family company from Blackburn take on the might of the Lucozades and Gatorades of this world?

TL: What puzzled me back then was that there was some really interesting research sponsored by these really big companies, but it didn't seem to translate to the products. As soon as you get a big company involved you get a load of marketers and accountants weighing in and they end up doing spreadsheet management. They're always looking at margins and how to save a few pennies.

It wasn't easy – as they say, 'It takes a lifetime of practice to be an overnight success' – but word spread and people seemed to appreciate what we were trying to do. We got calls from all kinds of crazy people. I'd pick up the phone and the voice would say, 'It's Sir Ranulph here.' I'd think eh? It was Sir Ranulph Fiennes. ☺

Lawson was the brains behind SiS, but since selling the company in 2011 has set up Secret Training, whose clients include Tinkoff-Saxo



Lawson was adamant that his next venture would continue to push boundaries. His recent work has involved sticky rice, fish oils and vacuumed bananas...

Cyc: You sold SiS in 2011. Why was that?

TL: It was a family business, and different people wanted to take the company in different directions. It wasn't anyone's first choice.

Cyc: You're now back with your new company Secret Training. It all sounds very covert.

TL: The Secret Training name came from the Race Day Personal Care Kit. At races you know there are never enough pins for your number, the bathroom's going to run out of loo roll and there probably aren't going to be showers. The guys who've been around a while have the trade secrets so they turn up and can be organised. The name evolved around this idea of 'tricks of the trade'. The Race Day Personal Care Kit means you've got somewhere to put pins, there are flushable wipes, and we've even developed a soigneur's post-race wash. The old soigneur's favourite was a bit of eau de cologne, some soap and water and a garden sprayer. We figured if we designed that from the ground up we could do a better job and you wouldn't have to smell like your great aunt.



Cyc: As well as the Race Day Kit, you've got a new range of nutrition products called Stealth. What are the main differences compared to what went before?

TL: We weren't desperate to get back into this business unless we could do something a bit different. I found some research that made me think

there might be mileage in using sticky rice starch as a base for an improved isotonic energy gel. It's hard to do. We had a few occasions where we pushed the technology too far and ended up with an energy bar in an energy gel wrapper – it went rock hard and we couldn't get it out. We later discovered we could make fish oil emulsions that improved the bioavailability and improve the shelf life and it doesn't need to taste of fish.

When the Tour came to Yorkshire last year we showed Tinkoff-Saxo our Race Day Personal Care Kit and they were interested in cooperating with us to make an improved energy gel. So we went full gas to make the best gels we possibly could. We were backwards and forwards to them with different ideas. It was a great team to be able to work with.

Cyc: What were Tinkoff-Saxo looking for from you?

TL: Like many other consumers they were looking to do things more naturally. So they wanted something without artificial sweeteners. Someone also asked for a banana gel, so we found a way of processing real fruit. We discovered that by peeling them quickly and processing them in a vacuum, and then packing them off under nitrogen, we could preserve the nutrition in the fruit as well as the taste.

Cyc: What's the next big development in sports nutrition?

TL: You may have heard about Team GB using ketone esters as a secret weapon. Normally to produce ketones you'd need to be on a low-carb diet – less than 60g of carbs a day. There's a bit of research that if you use coconut oil or medium-chain triglycerides you can produce ketones with less carbohydrate restriction. Now it seems that ketones aren't just emergency fuel for when carbs run out, but there is an opinion that these things might be a better fuel. It's an interesting theory. *

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The social whirl

Cycling is a personal experience, says Frank Strack, so there are times when you should resist the urge to 'share'

Dear Frank

I've noticed more and more cyclists are posting their riding exploits to social media. Is this acceptable behaviour?

Ed, by email

Dear Ed

I went riding today, alone. It was warm, sunny. I had no plan other than to ride – no intervals, no hill repeats, no restrictions. Just a ride to reacquaint myself with the bicycle, to feel my sensations and see where the road and my mind would take me.

I've been off the bike for a week, after suffering a failure of judgement and going on a hiking trip for a few days with a friend. Why two Cyclists would elect to go for a walk

in the mountains without bikes and instead carrying heavy packs is beyond explanation.

It was good to be on the bike, just myself and my thoughts. I find that solo rides provide a centring effect that I have trouble finding elsewhere in life. Being alone within the urban landscape where my life plays out seems almost like stealing something.

I have a relationship with my shadow when I ride alone on sunny days like today. I watch it to read my technique. I look at my position, I watch the fluidity of my stroke, I look at my shoulders. My shoulders are one of the things that I love to watch most – I gauge whether they are still enough when I'm riding hard. When I am thin, like I am at this time of year, they look sharp.

Not all rides are like this, where I find insulation from the buzz of everyday life. Some days I'm so exhausted from work that I have nothing left to give once I swing my leg over the top tube. On those days, I'm happy simply to turn the pedals over. Other days, the chaos at work feeds the fire of ambition and I explore a new cavern of the Pain Cave.

When I ride with others, I am dependent on those around me and they are on me. I interact with them, I enjoy their stories and share some of my own. I take pulls on the front, I drift to the back. I might take a dig or two, just to play around, or sprint just to prove how horrible I am in a sprint.

In a race the co-dependency shifts away from the social towards tactics. But still, the experience is largely internally focused – each of us is in a bubble of our own, floating alongside one another with the edges of our bubbles occasionally intersecting like some kind of living, 3D Venn diagram.

All this is to say that Cycling is fundamentally an individual experience. We ride because we have to ride. There is something within us that drives this impulse – no external fire burns to force us to choose this life. We may well ride with others and they may inspire us to achieve more, but the drive to ride a bicycle comes from within.

There is a positive aspect to posting rides on social media. Strava allows you to analyse historical rides and training patterns in a way that previously would have required the services of a coach and detailed training logs. It also allows friends to share in the experience of riding bikes in amazing places in a way that simply wasn't possible before.

This sport is principally about an individual's own experience – nothing else. The over-sharing of rides on social media distorts this principle into a vaguely narcissistic declaration of one's achievements on the bike. It rips it from the sanctity of our personal experience and flings it into an anonymous world of reactive Kudos, Likes, Retweets and Reblogs.

Obviously the greatest crime here is the posting of 10km or 15km rides on Strava with a footnote that says something like, 'Short ride before work.' Which is the Facebook equivalent of saying, 'That was a good sandwich.'

In other words, no one gives a shit.✿



Frank Strack is the creator and curator of *The Rules*. For further illumination see velominati.com or find a copy of *The Rules* (Sceptre) in all good bookshops. Email your questions to him at cyclist@dennis.co.uk



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Taste of the Tour

Stages 18 and 19 of this year's Tour de France look set to play pivotal roles in deciding the maillot jaune, with mammoth ascents, hilltop finishes and unfamiliar roads. *Cyclist* heads to the Alps in southern France to see what the pros have in store

Words JAMES SPENDER Photography GEORGE MARSHALL

here's something rather wonderful about France, and it's not just the landscape or the food – it's the language. After all, where else would have an official public body to protect the gender assignation of a sandwich, or fine one of its companies €500,000 for publishing a software manual in English only? (That public body is the Académie Française, and among other

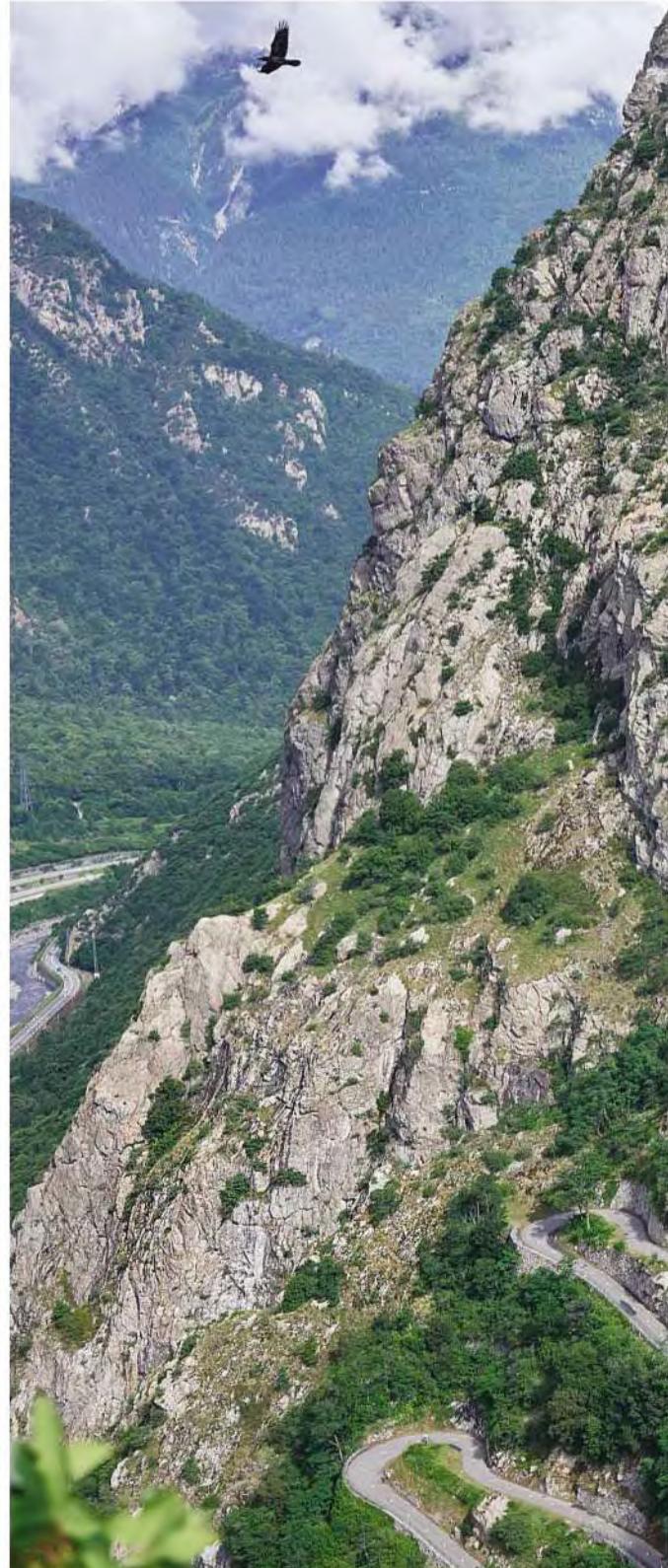
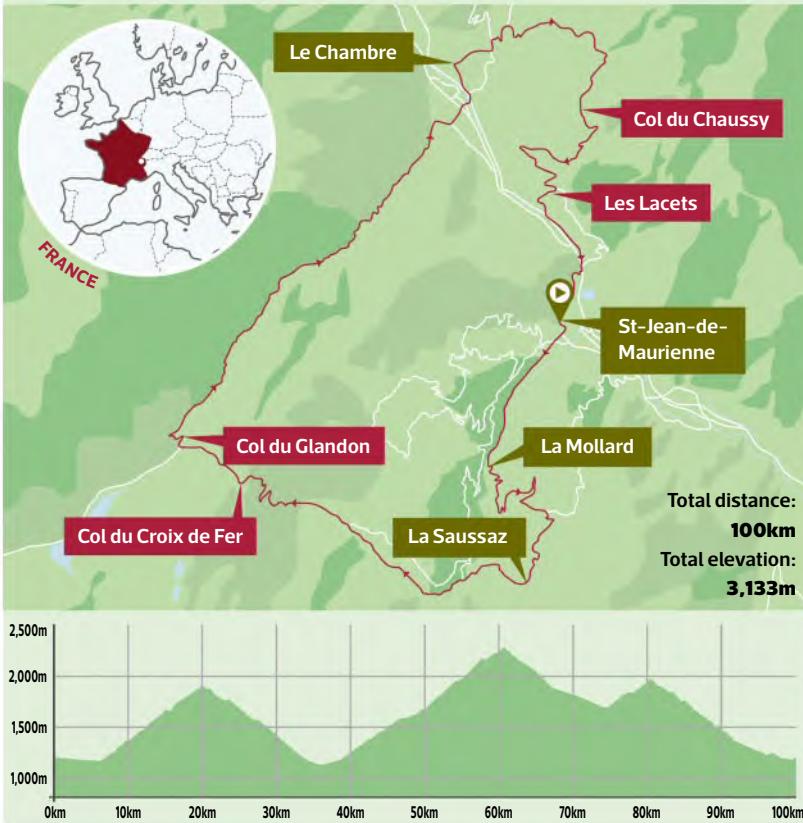
things it seeks to safeguard the French language from Anglicisation. You say *email*, it says *courriel*.) And where else would you hear the delightful phrase *Chacun voit midi à sa porte* or the charmingly named road Les Lacets des Montvernier?

The former translates as ‘everyone sees noon at his doorstep’, meaning that one’s subjective opinions are often incorrectly professed as fact, while the latter

Mapping the Tour

A mix of Stages 18 and 19, this is *Cyclist*'s homage to the 2015 Tour's Alpine stages

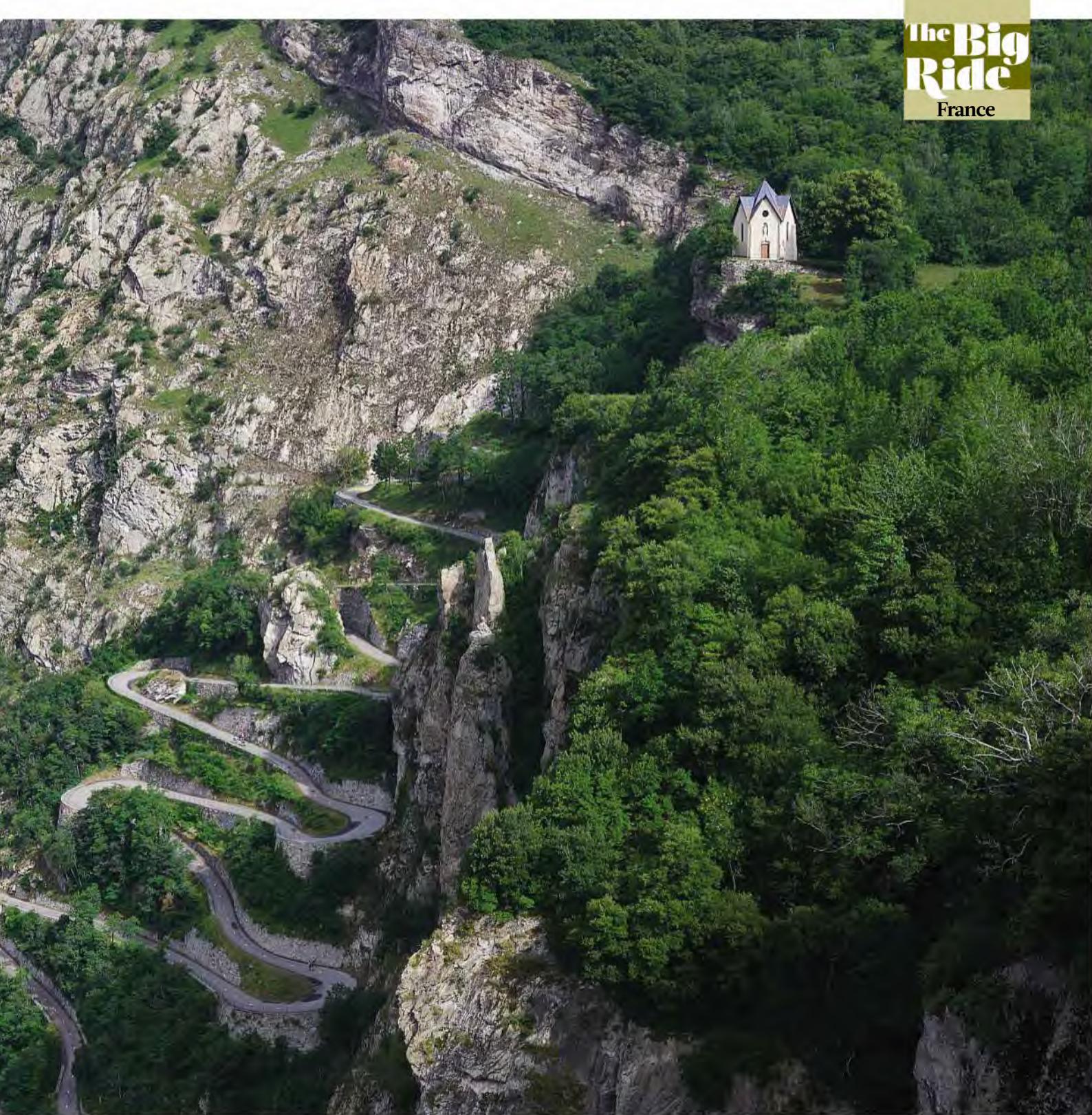
To download the route, go to cyclist.co.uk/38france. Begin in Saint-Jean-de-Maurienne, and head north out of town along the back roads adjacent to the A43. Turn onto the D77B, Les Lacets climb, and follow the natural path of the road through Montvernier to the top of the Col du Chaussy. Continue down the back of the col and follow the D99 towards La Chambre. Take the D927 south-west towards Saint-Etienne-de-Cuines and the Col du Glandon. Follow signs to the top, on to the Col du Croix de Fer, Saint-Sorlin-d'Arves and east towards La Saussaz. Head north to La Mollard and the D110, which will deliver you back to Saint-Jean-de-Maurienne after 20km. Seek out Le Sun restaurant and eat.



literally means ‘the laces of Montvernier’, a moniker given to the stretch of tarmac that drapes and squiggles its way from the village of Pontamafrey up to the tiny town of Montvernier. Right now, as Les Lacets’ 18 hairpins bask tantalisingly in the early morning sun, this road certainly is noon at my doorstep. And the Tour hasn’t even got here yet.

Paving the way

Before the world’s greatest sporting spectacle can tackle the roads of France, however, preparations must be made. For the Savoie region, in particular the towns of Saint-Jean de Maurienne, La Toussuire and Modane, that’s meant



Workmen have been painstakingly filling and patching every wrinkle and pothole in the beaten-up tarmac in preparation for the onslaught of 422 skinny-tyred wheels

The hexagonal form of the Chapelle de la Balmes looks down upon the winding hairpins of Les Lacets de Montvernier, whose 18 hairpins traverse a 400m cliff to the top. Some serious civil engineering



► paying Tour organiser Amaury Sport Organisation (ASO) €300,000 apiece for the chance to host the start and finishes of Stages 18, 19 and 20, and bringing local infrastructure up to the ASO's exacting standards.

It might seem like a hefty investment for three towns whose combined populations total less than 13,000, but as Céline Guillermin from the Savoie Mont Blanc tourist board is now telling me, 'The financial impact of the Tour on those towns is almost immeasurable. It will put them on the map, you'll see.'

With that, Céline revs the engine of her white Renault and speeds off to our first rendezvous, leaving my riding partner, Luciana, and me to gently wend our way through the narrow, sleepy streets of Saint-Jean de Maurienne. As we leave the city perimeter Luciana remarks on how lucky we are with the weather today, just blue skies and some wispy halos around the tops of the mountains. I ask her what 'please don't jinx it' is in French. She just throws back her head and laughs. 'Well, we are in the Alps. Anything can happen,' she says mischievously.

A few kilometres on, past a landscape that mixes industrial furniture, idyllic houses and babbling rivers, we spy Céline's parked car. She's in conversation with a workman in a hi-viz jacket who looks like he sleeps in the bucket of his digger, but as we get closer I realise why.

The rider's ride

Norco Valence SL, £3,000, evanscycles.com

Weight and gearing were always going to be key factors for this ride, so at 7.3kg (56cm) with a compact chainset and 11–32t cassette, the Valence SL seemed like a good choice for an Alpine assault, and I'm pleased to say it lived up to expectations. The low-slung, compact geometry no doubt helps Norco keep frame-weight low while maintaining frame stiffness. That's not to say the Valence is a sprinter's delight – there are plenty of stiffer bikes out there – but for an all-day ride with a lot of climbing, it's a sound and very comfortable choice.





Left: Halfway up the Col du Chaussey the road carves spectacularly under the mountainside

Right and bottom: Chapels abound in this region. As do crosses



We're at the foot of Les Lacets, and hanging in the air is the unmistakable tang of drying bitumen. It turns out that far from snoozing, the workman and his crew have been painstakingly filling and patching every wrinkle and pothole in the beaten-up tarmac in preparation for the onslaught of 422 skinny-tyred wheels in a few weeks' time. When those professionals arrive here they will have already covered 170km from Gap on Stage 18, but for riders vying for general classification supremacy, the last 15km of the stage will be fraught, as they battle up Les Lacets in search of crucial seconds. It's here Froome's trademark accelerations might just come into their own.

For a moment it seems our own make-or-break time has come markedly earlier in proceedings, the gruff workman not looking too impressed at the thought of us riding up

Plywood cutouts of cartoon racers painted in yellow, green, white and polka-dot line front gardens and balconies

his newly finished road, but after a bit of pointing and some well-played hand-on-hip defiance, Céline brokers a deal whereby Luciana and I are granted safe passage up Les Lacets, provided Céline promises not to drive up it.

Three hairpins in and things couldn't have worked out any better. Save for the waterfall carving its path through the rock alongside us, Les Lacets is gloriously peaceful, the towns below quietly fading away as we near the top.

At 3.4km long and nudging 8% Les Lacets isn't an easy climb, but our fresh legs and gentle pace make for a relaxed ascent, and we soon find ourselves at the crossroads where





Luciana, Cyclist's ride companion, remarked on how lucky we'd been with the weather, not long before the clouds rolled in

It's only when I look down at my Garmin that I realise just how long I've been stood absorbing the view – a spider has begun to spin its web across my handlebars

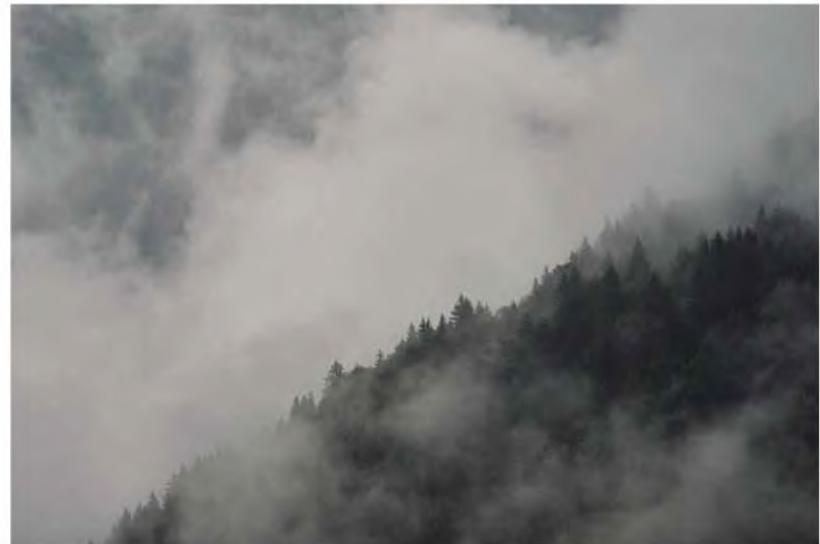
► Les Lacets becomes the Col du Chaussy. Céline is there to meet us, and explains that, while we might have to shoulder our bikes, a walk across a small grassy field to our right is a must for one of the best lookout spots in town.

We dutifully set off in the direction she's pointing, and after a less-than-surefooted scramble up a muddy bank and through some trees, we are indeed greeted by a postcard view of the valley below, and the hairpins we've just traversed. It's a mesmerising experience. Only when I look down at my Garmin do I realise just how long I've been stood absorbing the view – a spider has begun to spin its web across my handlebars. Sadly it looks like it weighs a few grams and I reckon the drag coefficient of the ensuing web will be high, so I brush it off into the undergrowth. *Chapeau, mon petit frère, et bonne chance.*

Combination conflation

From here on our ride is set to become a hybrid of two Tour stages to incorporate Les Lacets from Stage 18 into a loop that takes in the best of Stage 19, namely the Col du Chaussy, the Col du Glandon and the Col de la Croix de Fer. The pros will finish Stage 19 with a climb up to the ski station at La Toussuire, but with our planned 100km route already packing 3,100m of climbing, I've decided La Toussuire might be a col too far. Not that I'll admit that to Luciana or Céline. A cyclist's pride is a powerful thing.

Passing through Montvernier and onto the Col du Chaussy proper, we're left in no doubt what sporting event is coming to town. Coloured bunting is strung from house to house, and plywood cutouts of cartoon racers painted in yellow, green, white and polka-dot line front gardens and balconies. The sweetly organic smell of cut grass carries on the breeze, as distant farmers scythe the hillsides and ►





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Left: Local farmers have been installing electric fencing to keep livestock off the Tour route, with still a few fields to go

Right: Judging by the road this isn't the first time the Col du Glandon has welcomed two-wheeled visitors



jacket, and a look at the skies ahead indicates he – and we – might be needing such garments. No time to stop though, as Luciana's on a mission, so it's with light drizzle dusting our forearms and legs that we plough on for the top.

If the views at Les Lacets were good, the views from near the top of the Col du Chaussy are spectacular. Far in the distance patches of snow melt into slate-grey rock and lush green flora, flanking either side of the valley below and creating a V-shaped gap on the horizon through which Saint-Jean du Marienne is just visible in the haze. Prior to 2015 the Col du Chaussy has not made it into the Tour, largely due to a lack of connecting roads, making it an up-and-back journey. But thanks to works completed in 2012, it's now ripe for the Tour's picking, and although it's unlikely the pros will have much time

► unfurl new electric fencing, presumably to keep grazing livestock from becoming bumbling race participants. It's the epitome of bucolic, topped off perfectly by an elderly gentleman proudly lashing an even more elderly bike to a stake outside his house: hand-painted red and white striped frame to reflect the Savoie region's flag; yellow handlebars and saddle to reflect his sport's most prized possession.

Unfortunately there's not time to stop and exchange pleasantries, as Luciana needs to be back in Saint-Jean du Maurienne at lunchtime to drive to L'Ardéchoise cycling festival in the Ardèche region. As we press on, the road is swallowed up by trees and the vista of the Maurienne valley below disappears in a sea of vibrant green. With little else to concentrate on except the creeping gradient of the road, I can't help but relay the story of another hapless *Cyclist* journalist who took on L'Ardéchoise's gruelling 220km sportive route a few years ago, only to crash and snap his bike clean in half within the first 50km. Undeterred, he called in to the race organiser and borrowed her hybrid bike to complete the remaining 170km (for the full story, see issue 3). A cyclist's pride indeed.

Luciana seems worried by the story, so I assure her she'll be fine, and judging by the metronomic pace she's set for us both I don't doubt it, as least as far as climbing is concerned. One of those enviably bronzed, eternally youthful Alpine types that runs a ski school by winter, she says she only took up cycling four years ago. You wouldn't know it.

Eventually the treeline breaks, just in time to see a rider up the road stop to extract something from his bulging saddle bag. We get closer and I'm worried to note it's a



When we stop in the cafe, the two farmers raise champagne glasses in our direction – not the kind of vessels I'd normally expect to see at midday at 1,500m above sea level



to take in the scenery, you can bet the camera helicopters and Phil Liggett will have a field day when the peloton rolls through. I'm starting to see what all the fuss is about.

Chic and unique

Like an oasis in the desert, a cafe at the col's summit creeps into view, heralding the first coffee stop of the day. Despite the continental Europeans' ongoing love affair with UHT milk and the proprietor's undisguised mirth at my order of a café au lait (Luciana explains they all drink espressos round here), the coffee is rather good and the caffeine most certainly welcome. Looking around, the clientele is largely made up of two farmers and their collie dogs, so it's not long before Luciana has struck up a conversation. 'They say they're looking forward to the Tour coming through,' she translates. I nod in approval. They raise two champagne glasses in our direction – not the kind of vessels I'd normally expect to see at midday at 1,500m above sea level – then say something in French before bursting into fits of laughter. 'He says cheers,' says Luciana, delighted. 'And that soon the world will see how chic Chaussey farmers are. Here even ice tea is drunk from champagne flutes!' By their wide grins I'm not entirely convinced that's all they're drinking.

Coffee downed, it's time to make the descent back towards Saint-Jean du Maurienne to drop off Luciana, ☎







I figure it will be a rip-roaring descent, and within the first few hundred metres I can tell the Col du Chaussy isn't about to disappoint



which though not quite on my initial course profile I nevertheless welcome. It was a long drag uphill so I figure it will be a rip-roaring descent on the way back down, and within the first few hundred metres I can tell the Col du Chaussy isn't about to disappoint. Where the Les Lacets' hairpins were tight and compact, the Chaussy's are long and smooth, with little more than a few other riders coming up the other way to contend with. Hunkered down with the freewheel fizzing as gravity does its work, this is easily one of the most exhilarating descents I've ridden in a long while.

Baring teeth

After a quick bite to eat in Saint-Jean du Maurienne it's time to bid farewell to Luciana and meet her replacements



Haute cuisine

Add a few more stitches to your rich dietary tapestry

The Savoie region is packed full of flavour, so don't simply stick to the ubiquitous pizzerias and cafes. Wine in the area is excellent, with the locally produced Jacquere grape variety making for a distinctively light, floral white wine, and beer is rather special too, with local artisanal brewers Galibier and Leman offering a range of hoppy, effervescent post-ride treats.

For a mountain valley, Maurienne restaurant menus are surprisingly well equipped with fish, which in many cases is landed fresh a few hours away on the coast. A great mid or post-ride spot for such things is Le Sun restaurant in Saint-Jean du Maurienne (le-sun.fr). Try its *Poêlée de seiches à la provençale*, a cuttlefish dish – think meaty squid – that's heavy on the garlic and herbs, and big on hunger-busting taste. Plus, you're in France, so it's crème brûlées all round for dessert. With climbs like these, you've earned it.

for the rest of the ride, Gauthier and Florian. Both men work on the railways, which, explains Gauthier, is a perfect job for a cyclist, 'because it means we finish early so can go spend the rest of the day riding'. Judging by the size of Gauthier's legs I dare say he probably spends more time on his bike than on the trains, so it's with little protest that I let him take up the reins on the front to deliver us to the foot of the Col du Glandon.

To begin with things are looking fine weather-wise, but by the second kilometre I realise I'm alarmingly underdressed, and by kilometre three I'm soaked through. Rivulets of water cascade down the sodden tarmac and large drips plop off the trees onto my helmet. Gauthier seems to be having the time of his life though, and ploughs ahead like a freight train. I'm determined not to be shown up, so I force an extra stomp on the pedals, shift up a gear and try to match his pace. He's clearly noticed I'm gassing, so with a cheeky look in his eye he turns and asks what gear set-up I'm running. I tell him it's a compact with a 32 on the back. He laughs and points to his drivetrain: '53/39 and I think maybe a 26 sprocket today. It's OK though, the first 10km of the Glandon is very easy like this. The next 10, not so easy, but we will be fine, hey Florian?' I look back at Florian, who's smiling as well. ☺

Left: Whoever's selling the plywood cutouts of cyclists is making a killing – no garden in the Savoie region seems complete without one

A clearer day would offer some pretty special views, but then again I don't think I'd have much energy to take them in



● I'm forced to grimace and bear it. If there's one saving grace, however, it's that the considerable effort is keeping me nice and warm, despite my drowned rat appearance. On the one hand the weather seems a shame – a clearer day would offer some pretty special views – but then again I don't think I'd have much energy to take them in. Even on the early slopes this is stem-chewing territory.

Like all good cols in the Alps, the Glandon is furnished with little stone bollards that display the gradient and number of kilometres to the top. Depending on one's mood and the proximity to the summit these can either be a massive motivational help, or a jarring, regimented reminder of the reality of suffering on a bicycle. As we approach the portentous 10th kilometre bollard, I'm definitely in the latter camp. If you really enjoy climbing – and I often doubt those that claim to – then the Glandon is for you. It's the col that just keeps on giving.

As if on cue, a false flat gives way to a vicious spike and all thoughts of single-digit gradients are washed away almost as quickly as the torrents of water flowing down the road. I'm somewhat comforted to note that none of us has spoken for a good few minutes, but no sooner do I start to believe we're all suffering to the same degree, such that we might even ease off the pace a touch, than Gauthier turns round and cheerfully points out a local landmark. 'Look, it's a football pitch, way up here! How great would it be to play there?' I want to tell him that I don't have any spare energy for neck craning or eyeball rotation, but my body can barely muster a grunt.

Eventually we reach what I assume is the top, and indeed it is – of the Glandon. Apparently there are still

By the numbers

The stats that matter

100

Kilometres ridden

3,133

Metres climbed

4

Cols ticked off

83

Hairpins negotiated

1

Cuttlefish eaten

900,000

Euros paid by three towns to host the Tour





a few hundred metres of road to go before we reach the real pinnacle in these parts, the Col de la Croix de Fer.

Descending for a moment before hastily punching our way to the top, I'm not sure what I'm more grateful to see – the infamous iron cross on its concrete plinth or Céline sitting in her car in the layby. Taking pity, she hastily pops the boot and I hastily busy myself with putting on more layers in order to shelter from the rain under the hatchback roof.

I can't recall quite who said it, but I remember reading an interview once with a pro rider who explained how perverse he found the amateurs' obsession with suffering. The reason, he explained, was that suffering on a bike just isn't very nice, and the only reason the professionals go through it is because someone's paying them to. So why, if it's not your job, do us amateurs seek it out so readily?

Over the last few kilometres I was dwelling on this and thinking how right the pro's argument was. Yet, strangely, now I'm here at the top it all makes sense again. Bedraggled and empty, yes, but the sight of the Croix de Fer set against the gnarled mountainous terrain suddenly trips my brain into a wonderful sense of wellbeing. I made it. I'm seeing it. I pedalled it. And the only way from here is down.

Down and out

With a sodden road and heavy skies it seems Gauthier and Florian feel they've done their work for the day, and frankly I don't blame them. If it was another day and if I didn't feel duty bound to complete the ride – as much to save face as anything else – I might well jump in the car with them, but I figure I've come this far, so why stop now? Below me stretches out a twisting path over

The beginning of the Col du Glandon is actually quite pleasant (far left), but by the top (above) Cyclist is reduced to bravely – or stupidly – soldiering on in summer kit despite the heavy rain and fog

Arriving at the top of the Col de la Croix de Fer makes everything worth it, and proves you don't always need blue skies for spectacular views



The road surface is poor, the corners greasy and the weather is getting worse, but all these factors come together to make the perfect storm of a ride

which the road drops from nearly 2,000m to a little over 400m. Admittedly the going looks treacherous given the conditions, but bolstered by warm clothing and the anticipation of such a descent, I opt to go for it, and it's the best decision I've made all day.

The road surface is poor, the corners greasy and the weather is getting worse, but somehow all these factors come together to make the perfect storm of a ride. It's as if the world is conspiring against me, yet so long as I keep a cool head and a firm grip on the bars, I know I can beat it back.

The rain is stinging my cheeks and my forearms are beginning to ache, but there it is again, that palpable sense of fulfilment, of a mind dedicated solely to the now, of a body railing desperately close its limits. What discomfort there was on the climb up has been totally consumed by the thrilling excitement of this journey down, and along with that, any other thoughts, worries and stresses have been scattered to the whistling wind. Just me, my bike and the rushing road ahead. Suffering? Bliss. ♦
James Spender is staff writer for Cyclist magazine and is still drying out

How we got there

TRAVEL

It's not often you fly to one country in order to go to another, but for the Savoie region it's easiest to fly in to Geneva, before skipping the border in a hire car to France. The drive is around 1.5 hours – just don't forget to bring euros for the toll booths. Around €25 should do it.

ACCOMMODATION

We stayed in the Hotel Saint Georges in Saint-Jean du Maurienne, located right in the thick of the area's best climbs. Twin rooms with half board are €72pppn, and the hotel is geared up for bikes, from a safe store house to jet washes to a vending machine

that dispenses Boeuf Bourguignon ready meals round the clock. Visit hotel-saintgeorges.com for info.

THANKS

The Savoie Mont Blanc tourist board provided invaluable help and impeccable organisation. A special thanks to Céline Guillermin, who drove, fed and watered us along the way, and her colleague Nadine Carle-Edgar, who helped with arrangements. Also special thanks to Alex Gros from Maurienne Tourism. Visit savoie-mont-blanc.com and maurienne-tourisme.com for detailed maps, route information and a full exposition of what the area has to offer.

TIME TO CLIMB

Cumbre Del Sol - Spain



DROMARTI



PANIC STATIONS

That race or sportive is looming and you know you haven't done enough training. Here's how to get yourself ready in time to hit the start line in the best possible shape

Words **MICHAEL DONLEVY** Photography **DANNY BIRD**

Life would be great if it didn't get in the way. You ride a bike because, as a result, you enjoy life more, but it can be hard to ride a bike when life is throwing figurative potholes, diversions and red lights in the way.

That can make it hard to fit in enough training, and sometimes things happen that completely derail your plans. You may have entered an event, planning your preparation so you would arrive on the start line in peak condition, only to find reality has other ideas. Work went bananas, you were moving house, or perhaps you simply found you were overcome by beer. The result is that, with just weeks or even days to go, you haven't done the training you need to. So what do you now?

The obvious answer is not to find yourself in this situation. 'Remember the six Ps: perfect preparation prevents piss-poor performance. That's my answer,' says ABCC senior coach Ian Goodhew. 'There isn't an excuse for this. If you're going to do it, do it properly. Get your arse in gear and stop whinging.'

You can do it without breaking down. But if you spent the winter sitting on the couch drinking five cans of beer a night you're wasting your time.'

'If you had a good winter of training you do have a foundation to work from,' Goodhew agrees. 'If it's a short, sharp event like a crit race you won't have the speed but you'll have basic fitness and that's better than the other way round. You don't want to turn up to a 100-mile sportive with no base to work from - that's when things get brutal. So it's about event-appropriate training. Think: "What is the event asking me to do?" and do as much of it as you can in the time you have left. If you ride one hour on the flat to work and back five times a week, and your event is four hours on the hills in one day, you're training will help a little, but the benefits will be limited.'

Newman disagrees slightly. 'How fit you need to be is relative. If it's a sportive it doesn't really matter whether you're gold standard or silver standard,' he says. 'The most important consideration is fatigue, so you need to be able to pace yourself. The good thing about sportives

'Don't obsess about the training you haven't done because this will simply add stress to the situation. Instead, make a plan and stick to it'

Unless you're trying to win the Tour de France, it's not just about performance. 'If you prepare properly you feel better and enjoy it more, and enjoying it should be one of the biggest reasons for doing it,' Goodhew adds. 'If you don't prepare properly you feel crap. Don't be an idiot. It's not rocket science.'

Getting to first base

So far, so black and white. But that doesn't help if you do find yourself in this situation and need a course of action. First, how much you can achieve in a short space of time depends on how fit you are. You're more likely to benefit from cramming in some last-minute training if you're working from a solid base, whereas if you've entered an event on a whim or for a bet when you haven't sat on a bike since you were pulling wheelies in the park as a kid, you're going to find it that bit harder.

'Your base level of fitness is crucial,' says coach Tom Newman (capitalcyclecoaching.co.uk). 'If you built up fitness during the off season, but have let it slide for whatever reason as your event nears, you can embark on some "panic training" to stimulate the muscles.'

is that if you enter a 100-mile event there are usually shorter distances as well so you could, for instance, switch to the 30-mile route at the last minute.' True enough, but let's assume you want to go through with the full distance.

Keep calm and carry on

With physical activity the concept of 'cramming' doesn't apply as it can with exams. You can't simply overload muscles every night the way you might your brain. Instead you need to think carefully about what you can achieve in what limited time you have available.

'Accept where you are because you can't get the training time back. Take a calm view of things,' says British Cycling coach Will Newton. 'Don't obsess about the training you haven't done because this will simply add stress to the situation. Instead, make a plan and stick to it. In training, everything works [in terms of body adaptation] for six weeks before your body adapts to it, so if you have a month to go you're not completely out of time. And I always remember the adage that one coach told me: a poor plan executed with conviction will outdo a perfect plan executed half-heartedly.' ☎

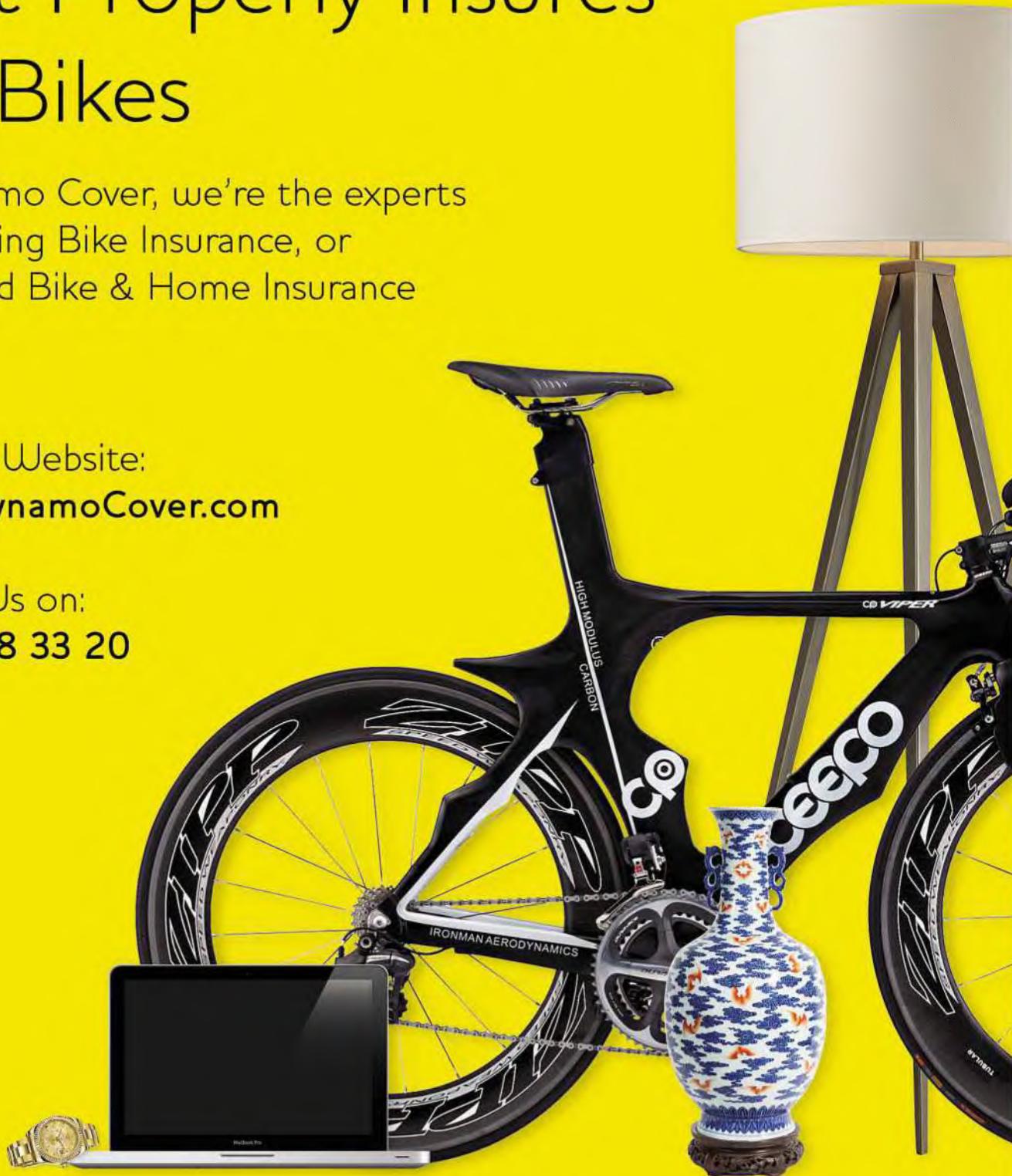


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► If you don't have the base fitness mentioned earlier, this is the thing to work on, however long you have left. 'Concentrate on aerobic development,' says Newton. 'You can add in some intervals, some threshold training to try to improve your VO₂ max, but most of your training should be reasonably steady state. Then throw in sessions that mimic your event – hills if it's a sportive, intervals that will mix bursts of high and low intensity if it's a crit race. But whatever plan you write down, commit to it. Hit every workout – or at least start every workout, even on days when you feel shocking.'

An alternative is to use the event you haven't prepared for as training for an event that you can prepare for further down the

– a sportive or TT – is always going to be easier to complete than a road race where there are large fluctuations in speed that could find you out,' he says. But he does believe that, if you're used to competing and this lack of preparation is simply a blip on your part, experience does count. 'If you have good roadcraft, a wily rider can survive undertrained on a flat course.'

But that isn't the case for everyone, and it helps to know where you are. Luckily technology has evolved to the point where it can do just that. 'If you've entered a road race, you can use Strava to get a measure of your fitness,' says Newman. 'If you find a section where, say, Cat 3 riders are taking three minutes and you're taking four and

'If you're entering a road race and you haven't trained, you may well find that you're spat out the back early on and it's effectively a time-trial'

line – although this again may depend on what type of event it is. 'There's a snag,' says Newton. 'You can tell yourself that you're not going to race, but stick a number on your back and suddenly everything's a race. If you're entering a road race and you haven't trained, you may well find that you're spat out the back early on and it's effectively a time-trial, in which case you may be wasting your time and will feel demoralised, unless you want to spend good money entering a road race to train for a TT. But if it's a sportive you can simply go along and enjoy the day as best you can. At the very least you'll probably get to see some beautiful countryside.'

Cycling coach Martyn Frank (coachingrevolutions.com) agrees. 'An event that you perform at your own pace

a half, forget it. You're not going to be in contention. Training at this stage won't make a difference. You're better off concentrating on a different event further down the line.'

Making hard choices

That leads us to another option, even if it's not one that's going to cover you in glory. You might want to consider pulling out, although as well as taking into account your base level of fitness it's also worth thinking in a little more detail about *why* you haven't been training.

'If you've been ill, you have a decision to make: "Should I be doing this?"' says Goodhew. 'The only way of measuring your recovery – unless you're a pro with personal doctors and huge budgets – is by taking

The final countdown

Is your training running late? Here's what to do if you're picking up from four weeks, a fortnight or one week out

FOUR WEEKS TO GO

'What to do with a month to go will be specific to the event you're entering,' says coach Martyn Frank. 'But as an example I'd be looking to ride five times a week in this format...'

Monday: Day off

Tuesday: Intervals (hard) at threshold for a TT, or threshold and over if you're entering a road race to mimic the sudden change of speed

Wednesday: Endurance ride (easy) to aid recovery

Thursday: Intervals (hard)

Friday: Day off

Saturday: Brisk ride, keeping the chain tight

Sunday: Long endurance ride

TWO WEEKS TO GO

'I'd still do the above plan until one week before the event, even if you can only do it for one week, and then start to taper,' says Frank. 'Tapering is about dropping the volume but not the intensity, so ease back and perform one hard interval in a session where you may have been performing six. This keeps you sharp but allows time for greater recovery.'

ONE WEEK TO GO

'If you haven't done anything for months, the best thing you can do is go for one long ride the week before the event,' says Tom Newman. 'And if that event is on a Sunday, go for shorter rides on the Tuesday and Thursday before. Training at this stage won't make a difference but it will at least get you on the bike.'



'I hear people say, "I haven't prepared," and think, why not? If you want to enjoy it, you'll enjoy it so much more if you've prepared'

► your heart rate. But a viral infection won't increase your heart rate so in that case you still don't know. My rule of thumb – which isn't scientific, but is a case of being sensible about it – is to recover for the same length of time that you've been ill. So if you've been unwell for a week, take a week off training and competing. At a push you can do recovery rides for three days, but that depends how ill you've been. The thing people get wrong the most is to come back too early after illness. Then you pay for it.'

Injury is a different matter. 'In a way it's easier to gauge whether you're fit to ride or not,' says Goodhew. 'If you've broken your collarbone and it still hurts on rough roads, you're probably not going to make it. Plus you'll have been losing fitness while taking time off. It's different for the pros, who often come back from injury really quickly, because they have massive core fitness so their recovery is quicker and more complete.'

'Pro riders do cram in last-minute training,' says Frank. 'You'll see instances every year where a rider suffers a broken collar bone in the Tour de France and comes back for the Vuelta a Espana, but remember it's their job to ride a bike and part of that is to rest. Unfortunately we don't have that opportunity with work, family and social commitments.'

The final touches

If you're behind in your preparations, getting ready for race day isn't just about cramming in some last-minute training, say the coaches

EAT RIGHT

'If you're going to be OCD about one thing, make it nutrition,' says Will Newton. 'Clean eating is the key – don't eat any junk whatsoever. Know the healthy foods you're going to eat and in what amounts, and once you've made a nutrition plan, stick to it.'

SERVICE YOUR BIKE

'If you're still going to do it, at least go with a bike that works,' says Ian Goodhew. 'Fit new inner tubes, and take two pairs of shoes, spare tyres, a spare chain if you can. It's not very sexy but it's important.'

GET SOME REST

You can't simply train every day, like you would cram for an exam. 'If you've left it late, training and recovery will provide some benefit but physiological changes are often quoted to take between four and eight weeks,' says Martyn Frank. 'Rest is essential to getting fitter, because you need to give muscles time to recover. Don't train every day of the week, and don't do the same session two days running. If you do intervals one day, do an endurance ride the next so you work different muscles in different ways.'

Here Frank echoes Goodhew: 'If you're coming back from illness or injury as an amateur you're far better to wait until you're 100% recovered rather than come back early and be hit by a lack of recovery time from training.'

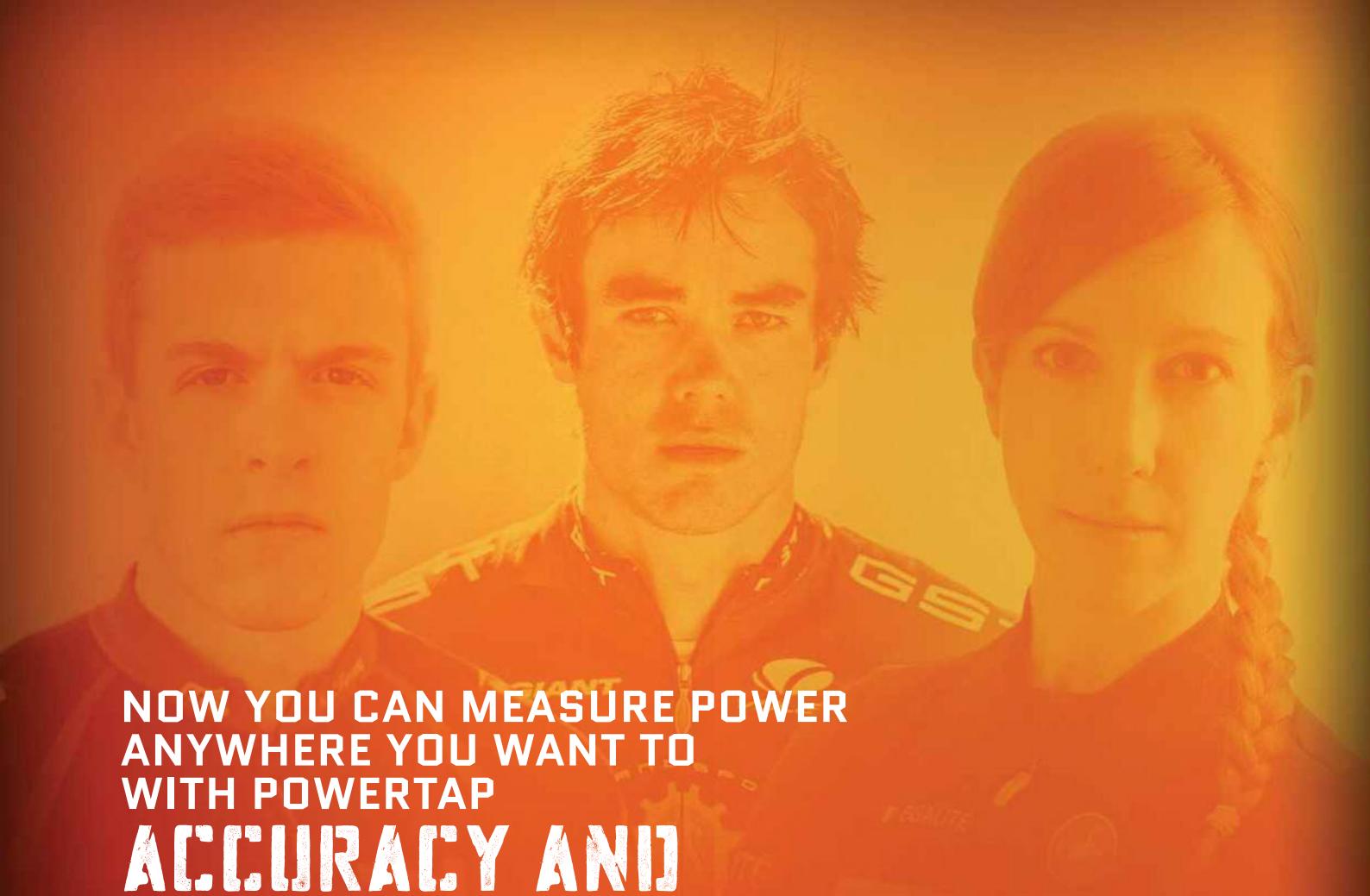
'It's OK to pull out of an event,' Newman adds. 'No one's going to judge you. Bear in mind that if you live in London and you've entered a sportive in Wales you have to balance the cost and the hassle of a weekend away with the satisfaction you're going to get from doing it. And if you're not ready for it that satisfaction isn't going to be great.'

If you're insistent that nothing is going to stop you, Goodhew has some last-minute advice: 'At least go with a bike that works. Don't rely on that tyre that punctured three months ago and you patched up by the side of the road. It's also about other people's safety and their race, and you're going to be in thick of it.'

'If it's your first race and you're not used to racing in a group, stay at the back and be alert. In a race it's like group riding with your mates times 10 – everything happens so much quicker.'

And at the very least, you can make sure you never find yourself in this situation again. 'I hear people say, "I haven't prepared," and think, why not? Who are you trying to convince?' says Goodhew. 'If you want to enjoy it, you'll enjoy it so much more if you've prepared. If you're looking for particular results, it's essential. Do you think the pros go, "It's wet so I'm not going out?"'

'I used to work with the British pro Harry Lodge at the British Cycling Southern Centre of Excellence,' Goodhew adds. 'He was living in Belgium in the 1990s and I went to visit him. It was typical Belgian weather – horizontal sleet – and I was parking up outside his house, fully expecting him to be inside in the warm, when he rode onto the drive. He invited me in for a cup of tea and once we were inside he put the kettle on and went upstairs, saying, "I'll just get changed." When he came back down he was in dry cycling kit – that was his idea of getting changed. He'd been out for three hours and wanted to dry off before going out for another three hours. He didn't tell me he was doing it, he just did it. That's what you want!' You've been told... ♦
Michael Donlevy is a freelance journalist who has no need for panic training. Panicking comes naturally



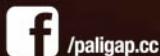
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Gentleman Gimondi

Felice Gimondi is a legend, with wins in all three of the Grand Tours. Yet as *Cyclist* discovers, the man who was also revered for his grace in defeat is a humble giant

Words **MARK BAILEY** Photography **JUAN TRUJILLO ANDRADES**

Now aged 72, Felice Gimondi spent his career battling – and occasionally beating – the great Eddy Merckx. Luckily for *Cyclist*, he loves to talk about it...

The elegant Italian cyclist Felice Gimondi is sitting beneath the shade of a stone colonnade at the 16th century Lazzaretto square in Bergamo, Lombardy. To the people strolling past in the early summer sunshine, Gimondi could be mistaken for any other well-groomed Italian retiree contentedly embracing *la dolce vita*. But half a century ago this year, at the age of just 22, Gimondi battled through 4,177km of pain and suffering to claim an improbable victory at the 1965 Tour de France in his debut year as a pro cyclist. The victory ignited a remarkable career in which Gimondi also won three Giro d'Italia titles (1967, 1969 and 1976), the Vuelta a Espana (1968), Paris-Roubaix (1966), the World Road Race Championships (1973) and Milan-San Remo (1974). He was the first Italian to win all three Grand Tours and one of only three riders to win the top five races in cycling (all three Grand Tours, plus the World Road Race and Paris-Roubaix), along with his contemporary Eddy Merckx and, later, Bernard Hinault.

Today Gimondi looks tanned and healthy at the age of 72. His silver hair and long, graceful limbs give him a patrician air. When we start talking about his career, his twinkling eyes and deep chuckles suggest he still treasures ◀

every moment of his life in cycling. I have barely had time to announce that I am from a British cycling magazine before he launches into a spontaneous appreciation of the world of British cycling that leaves our translator David desperately trying to catch up, like an exhausted rider attempting to hunt down a Felice Gimondi breakaway.

'Britain is now a wonderful cycling nation and I'm very impressed with what the country is doing,' he begins. 'I've heard great things about the British Cycling school, and how young riders are given three to four years of training to help them progress. If the world wants to know about the strength of cycling in Britain you only had to watch the Tour de France last year in Yorkshire. It was incredible.'

'I've heard great things about the British Cycling school, and how young riders are given years of training to help them progress'

The translator is heroically hanging on, but Gimondi is rampaging ahead, declaring that he wants to use this interview to wish Sir Bradley Wiggins luck in his Hour world record bid (successful as it turned out) and Hopes Chris Froome achieves 'every success' in the Tour de France. 'I also like Mark Cavendish, who is a fantastic sprinter,' he adds, as David finally closes the gap and – figuratively speaking – tags onto Gimondi's back wheel. David is in for a tough but entertaining hour. 'Cavendish reminds me of my old teammate Rik Van Linden [the Belgian rider who won the points classification in the 1975 Tour de France] because of that final burst in the final metres when he has double the speed of everyone else.' Gimondi gesticulates and makes a whooshing sound, visibly delighted by the thought of Cavendish in full flow.

After several minutes of rejoicing about British cycling, a cloud appears to fall across Gimondi's face. 'I had many

Gimondi demonstrates his favourite way to ride: 'The best way to feel that beautiful breeze is to take your hands off the handlebars and race with your arms in the sky. Like a winner'

English friends when I was a cyclist and so talking about this brings to mind the story of Tommy Simpson,' he says. Simpson, Britain's 1965 World Road Race Champion who died from a cocktail of amphetamines, alcohol and heatstroke on Mont Ventoux in the 1967 Tour de France, was due to join Gimondi's Salvarani team the following year. 'That night was one of the worst of my life. I remember the day very clearly. There were five or six of us on Ventoux and I just turned back and saw Tommy had fallen 100-150 metres behind. But we were racing and it was only during the massage session back at the hotel that I began to realise what had happened. I had started to understand French and I was hearing bits of conversation. When I learned about the bad news I was devastated. I remember it like it was yesterday. I was about to call it quits and go home. I didn't want to continue.'

Gimondi says it was Simpson's talent and manners that made such an impression on him. 'He was a good friend, a fantastic person, always smiling, with a great spirit.'





I always enjoyed his company best during criteriums. During the Tour there are lots of pressures – I don't want to get dropped, I have to look after the classification – but at the criteriums I could enjoy Tommy's company. He always treated me fairly and with respect. We all miss him.'

The delivery boy

Respect is important to Felice Gimondi. He is celebrated for his elegance on a bike (British fashion designer and cycling aesthete Paul Smith was a huge fan) but also for his humble response to success and his natural grace in defeat. In the book *Pedalare! Pedalare! A History Of Italian Cycling*, the author John Foot recalls how *La Gazzetta Dello Sport* journalist Luigi Gianoli likened Gimondi's sense of fair play and natural aplomb to the ethos of an English public schoolboy.

Gimondi says any personal characteristics must be attributed to his family. Born in Sedrina, 10km northwest of Bergamo, on 29 September 1942, he enjoyed a modest

GIMONDI ON...

...MODERN RACING

'In today's professional cycling arena the attention to detail is incredible. Teams can say, "Pay attention to that guy; don't let that breakaway get too far ahead." But I would like to see teams of five or six riders, tactics-free, racing purely on instinct.'

...PAIN AND MOTIVATION

'I used to think: if I win today I will be slightly better as a rider tomorrow; if I don't win I will be slightly worse as a rider, but I will still be me. Even when I was hit hard, usually by Eddy Merckx, I could go back to my hotel and think about the next day. Tomorrow is another chance to win – or another chance to get beaten by Merckx.'

...REGRETS

'I have a big regret from my career and my life. In 1967 I went to the Giro and won, and then I went to the Tour and I was flying but a stomach issue forced me out of contention. So my big regret is that I did not win the Tour and the Giro in the same year. It was bad luck.'



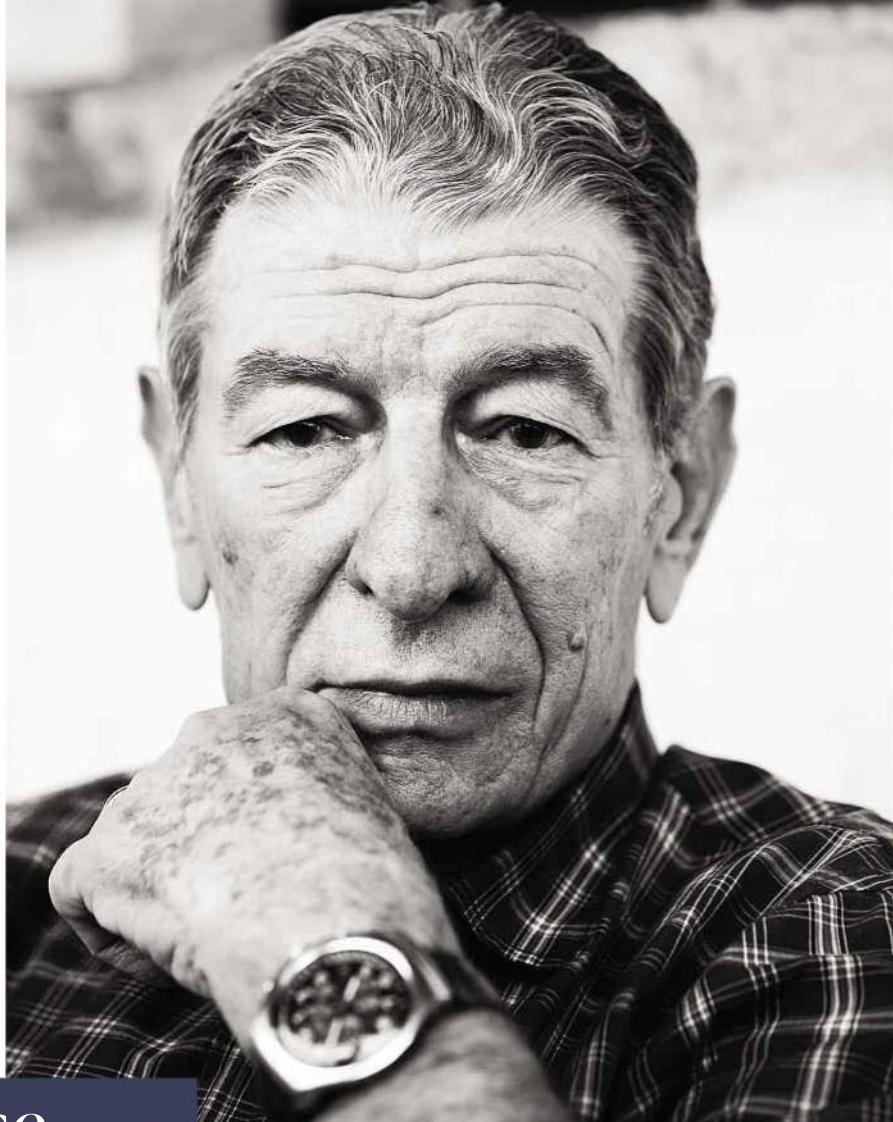
Gimondi finished on the podium at the Giro d'Italia a record nine times. He would surely have added to his three victories if it wasn't for Eddy Merckx

upbringing. His father, Mose, was a lorry driver and his mother, Angela, was the first postie in the region to use a bike. As a boy he would borrow his mum's bike – at first in secret and later with permission – to ride around the local roads. Eventually, as his strength grew, she would send him off to post letters to any houses that were located uphill. 'My parents' philosophy was always: let the boy go, let him be free and follow his instincts,' says Gimondi.

If his mother armed Gimondi with his first bike, it was his father who provided him with his racing spirit. A cycling aficionado, Mose would take the young Felice to local races and his passion for cycling soon grew. He couldn't afford his own bike until his father arranged for a work invoice to be paid in the form of a bicycle instead of money.

Gimondi's talent was obvious and he had great success in regional races, although he didn't always get things right. 'I remember being in a solo breakaway near here in Lombardy and there was a big climb to make,' he recalls. 'I went solo but halfway up I simply stopped because I felt like my legs were empty. The peloton just breezed through.'

The Italian has enjoyed a lifelong association with his local bike manufacturer Bianchi. He can remember getting



'We were very close, yes. But I always say it is better to win without Merckx than to finish second with Merckx. That's it. Simple'

his first bike from them in 1963. 'It was about a week before the world championships for amateurs and I must have looked good in a race because I was fastening my shoes and a voice said to me, "Would you like to ride a Bianchi?" I said, "Sure I would!" And I still do today.'

In 1964 Gimondi won the prestigious Tour de l'Avenir, an amateur ride viewed as a testing ground for future Tour de France champions. His success earned him a deal with the Italian Salvarani team. In his debut year he finished third in the Giro d'Italia but was not expected to ride the Tour so soon – let alone win it. But his team leader Vittorio Adorni was forced out with a stomach illness on Stage 9 and Gimondi took charge, beating Raymond Poulidor and Gianni Motta into second and third places. En route he won the 240km Stage 3 from Roubaix to Rouen, the

GIMONDI'S BEST BITS

The most memorable victories of an amazing career

1965 TOUR DE FRANCE

In his first year as a pro, Felice Gimondi won the 1965 Tour de France, despite the 22-year-old being called up as a late substitute for the Salvarani team, which had been plagued by injuries. He was due to support Vittorio Adorni until illness struck the team leader on Stage 9.

1967 GIRO D'ITALIA

In the 50th edition of the Italian Grand Tour, Gimondi conquered the 3,572km course in a time of 101hrs, 5mins and 34secs to claim his first of three Giro titles. He beat two-time Giro champions Franco Balmamion and Jacques Anquetil by more than three and a half minutes.

1966 PARIS-ROUBAIX

After making an explosive breakaway with 40km of the 262.5km route remaining, Gimondi rapidly extended his lead, knowing he would be beaten in a sprint finish, and eventually won by 4mins 8secs. The chasing pack included Eddy Merckx, Rik van Looy and Jan Janssen.

1973 ROAD RACE WORLD CHAMPIONSHIPS

Gimondi triumphed in Barcelona by pipping Freddy Maertens of Belgium in a late dash for the line. In the closing stages Gimondi was in a group that included Eddy Merckx and Joop Zoetemelk but he seized his chance for a memorable victory.

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TEAM at the Tour Series 2015, Croydon.
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► 26.9km time-trial on stage 18 from Aix-les-Bains to Le Revard, and the 37.8km time-trial from Versailles to Paris on the final day. His yellow jersey now resides in the iconic Madonna del Ghisallo church close to Lake Como.

'Winning the Tour de France was a big surprise,' he says. 'But I had just won the Tour de l'Avenir, which was an indication that I was a stage racer. I had also won the Giro de Lazio and other events as an amateur so everybody knew I was a good rider. I remember the Salvarani brothers, who were the sponsors of the team, asking me if I would like to ride the Tour. The terms of my contract stated that I only had to do one Grand Tour and I had already done the Giro. I said I would go home and ask my father but the truth is I had already decided I would love to do the Tour.'

'My favourite one-day win was definitely the World Championships because everybody thought I would be second that day'

The plan was for me to do just seven or eight days but of course I was still there in Paris – by then very happy and with a big head. It was my most special career win in terms of my physical freshness and instinctiveness.'

The Merckx factor

It was the Giro d'Italia that served up some of Gimondi's most flavoursome memories, however. He's convinced he would have won more Grand Tours if his career had not run parallel to that of Eddy Merckx, who won the Tour in 1969, 1970, 1971, 1972 and 1974 and the Giro in 1968, 1970, 1972, 1973 and 1974. 'I am still the record holder for the number of podiums at the Giro, which makes me very proud,' says Gimondi. 'Nobody else has stood on the podium nine times like I did. Even though my career ran parallel to Eddy Merckx, who strangled me in a couple of Giros, I won three Giros. But I think if Merckx was not there in my best years I could have won five Giros and two Tours de France like Fausto Coppi. During my career Eddy won five Giros and five Tours so I think it was possible.'

Gimondi reveals that, despite their rivalry, he was always good friends with Merckx. 'We were very close, yes,' he says. 'But I always say it is better to win without Merckx than to finish second with Merckx. That's it. Simple.'

The Italian says his first Giro triumph was 'special' but he is particularly proud of his last Giro win in 1976. 'I was 33 years old and I had to deal with other riders like Francesco Moser, Fausto Bertoglio and Johan De Muynck. I wasn't the same rider so I needed real race management. I finally saw it through when I beat De Muynck in the last time-trial [on Stage 22] so it was a special win.' The cherry



The Italian's ties with Bianchi date back to his amateur days. 'I must have looked good in a race because a voice said to me, "Would you like to ride a Bianchi?" I said, "Sure I would!" And I still am today'

on top was beating Eddy Merckx on the 238km Stage 21 that finished in his local town of Bergamo.

For Gimondi, the level of support he received from locals during the Giro was overwhelming. 'I remember during time-trials I could barely see the road. The fans were in front of me and then a gap would open up at the very moment I came by them. I could manage to go around the bends because I knew the roads. But I remember once a photographer who was trying to shoot me from the ground didn't get out the way. I was forced to jump over him with my front wheel but my rear wheel went over his legs.'

When asked to recall his first memory of the Giro, the Italian comes up with a surprising answer. 'In one of my first Giros Eddy Merckx had been riding strongly'





A LEGEND THROUGH TIME

How Gimondi completed the clean sweep

► 1965

Having won the Tour de l'Avenir the previous year, Gimondi takes three stage wins on his way to a debut victory in the Tour de France, aged 22.

► 1966

Wins Paris-Roubaix against a high-quality field including Eddy Merckx thanks to a blistering breakaway with 40km to go.

► 1967

Wins the Giro d'Italia for the first time, as well as two stages of the Tour de France and three other race wins.

► 1968

Takes overall victory in the Vuelta a Espana to complete the full set of Grand Tour wins. Also becomes Italian National Road Race Champion.

► 1969

Claims second Giro title. Also wins the Tour de Romandie and one stage at the Tour de France.

► 1973

Wins the World Road Race Championships, defying expectations to beat Eddy Merckx and Freddie Maertens.

► 1976

Clinches third Giro title, aged 33, with one stage win. Victory in the following year's Six Days of Milan is his last major win before retiring.



And during the night the sponsors came to my room to say they wanted me to attack the next day. I was under too much pressure, I could barely breathe and I lost seven minutes to Merckx that day. When I was struggling on a climb, there were three guys on my left and three guys on my right who were from the same school as me as a boy. They were crying because I had been dropped and I started crying too. That is the only time I ever remember crying at a race. I never cried after a race because the result is final. But to see my friends so upset was a horrible feeling.'

On top of the world

A talented all-rounder, Gimondi also won Paris-Roubaix in 1966 – by four minutes after a 40km solo breakaway. In 1973 he claimed the World Road Race Championships on a 248km course in Barcelona. And in 1974 he won Milan-San Remo. 'My favourite one-day win was definitely the World Championships because everybody thought I would be second that day. But after making me lose plenty of

races I think Merckx helped me win that race. It wasn't intentional but we were in a small group at the end and he attacked early and forced Freddy Maertens to launch a long sprint that he couldn't hold. Because of that I was able to win. I knew Merckx had run out of energy that day too.'

Intelligence was as important as talent for Gimondi. He would scribble the jersey numbers of his rivals onto his gloves so he knew who he had to watch out for and monitored who was working hard by the bulge of the veins in their legs. 'It is true I would look at the veins on people's legs,' he admits. 'But you could also tell from the time of their reaction to an attack whether their condition was improving or dropping.'

Gimondi rode in an era when it was normal to tuck into a juicy steak before races. 'Three hours before the race I would have a breakfast of steak with rice. During the race it was usually sandwiches with meat, honey or jam or a crostata with marmalade.' He says the longest stage he ever encountered was 360km long, at the Tour de France. 'Some stages of the Giro were very long too so you would be eating steak for breakfast at 4am. One day I rode from 7am until 5pm so I was on the road for 10 hours.'

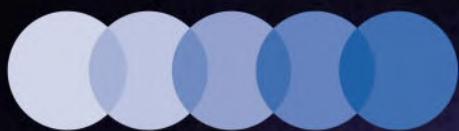
After 158 professional victories, Gimondi retired in 1978 halfway through the Giro dell'Emilia. It was pouring with rain, he was 36 years old and – quite simply – he'd had enough. On his retirement he set up an insurance business and he continues to work as an ambassador for Bianchi. On the day of this interview, he is in Bergamo to promote the Felice Gimondi Gran Fondo, happily accepting selfies with fans and chatting to amateur riders. 'It is beautiful to see so many cyclists enjoying this sport,' he says.

'Some stages of the Giro were very long, so you would be eating steak for breakfast at 4am. One day I rode, from 7am until 5pm'

Not long before this photo was taken, Gimondi was riding in the Italian Alps. 'It is the same for all cyclists. To feel good we need to ride'

Then I hear Gimondi say something about a 'maratona', followed by a long and boisterous laugh, and I suspect my time is up. But he says it is always a pleasure to talk about his cycling career to anyone who's happy to listen. Gimondi tells me he was cycling for two hours in the Bergamo Alps this morning, and that he hopes he never has to stop riding. 'Cycling is part of our DNA,' he says, eyes sparkling once more. 'It is the same for all cyclists. To feel good we need to cycle. When I go out for a ride I feel like a free man. And the best way to feel that beautiful breeze is to take your hands off the handlebars and race with your arms in the sky. Like a winner.'

Mark Bailey is a freelance writer who until recently thought a Maratona was an Italian chocolate bar



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Jurassic World

Cyclist heads to deepest Dorset to take in the views and landmarks on and around the Jurassic Coast

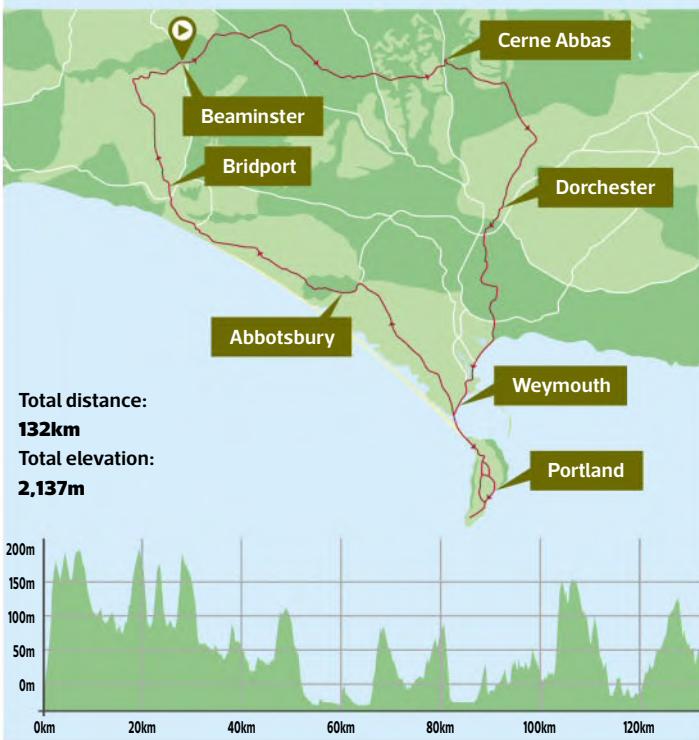
Words **STU BOWERS** Photography **GEOFF WAUGH**



Go mad in Dorset

Follow Cyclist's route to the south coast

To download the route, go to cyclist.co.uk/38dorset. The most obvious point to commence the loop is Beaminster, where there is plenty of parking. Head north out of the village on North Street, climbing almost immediately. Bear right and briefly join the A356 before turning left on Benville Lane. Continue east to Cerne Abbas and then on to Piddlerentide. Head south to the outskirts of Dorchester and cross the A35, due south to Weymouth. Follow the seafront in the direction of Portland, past Chesil Beach and climb up to the top of the headland, detouring if you wish to the Portland Bill lighthouse. Then backtrack on the coast road via Abbotsbury and on to Bridport. Head north to Dottery and Salwayash. After North Bowood, turn right through Stoke Abbott and return to Beaminster.



Fords are common in Dorset but a cobbled one is a rarer sight



They say that familiarity breeds contempt, and certainly this can be true for cycling as in is in any other area of life. The bike you've ridden for a few years is less appealing than the one in the shop window, not necessarily because yours isn't as good, but simply because you know exactly what it's like. The same can be said for roads. You get used to the routes you've ridden a hundred times and can become almost blind to the quality around you as you crave something new.

That's not always the case, however. I've lived and cycled in Dorset all my life and, despite having also been lucky enough to ride in some of the most spectacular places on earth, my local roads never fail to make an impression on me, both in terms of beauty and the physical gauntlets they throw down to even the fittest of riders. So when the editor suggested we did a UK Ride in Dorset, I was first in the queue, to the surprise of some of my colleagues.

But there are several very good reasons that Dorset an ideal location for cycling, the first being that a sizable chunk of its perimeter is



given over to coastline, stretching for 88 miles from Christchurch to Lyme Regis, and offering spectacular sea views. It also enjoys a sparse population relative to its size, largely because of the fact that half its inhabitants live in the seaside conurbation comprising Bournemouth and Poole. This means that if you explore further inland by bike and to the west of the county, away from the urbanisation and into the area referred to as 'Hardy's Wessex', you'll enjoy rich pickings. Many hours can be wiled





Cerne Abbas Giant

The Dorset landmark with the outstanding feature

If you begin the loop from our start point in Beaminster you'll find yourself at the foot of the famous Cerne Abbas Giant in just around 24km. It adorns the hillside just outside of the village from which it gets its name and stands as the UK's largest chalk hill figure at a massive 55m tall, and is famous for its (7m) erect penis – making it a slightly controversial landmark. Local folklore however believes it aids fertility, particularly for those who choose their love nest carefully. The giant has also played host to a few publicity stunts, such as being given a giant moustache for 'Movember' and buddied-up with an equally giant Homer Simpson figure (thankfully in his underpants) drawn on the adjacent hillside.

away in the lanes, blissfully traffic free (there are no motorways in Dorset). This is where most of the hills are located, and while the altitude is minuscule compared to the Lake District or Wales (the high point of this ride is only a little over 200m) the profile of a ride in this area will rarely be flat, if ever. That's what we – that's to say, myself and local Merida Race Team member Kim Little – have to look forward to as we prepare to pitch ourselves against some of Dorset's most challenging gradients, both inland and along its famous Jurassic coastline.

Everything on a plate

It looks like we'll be well fuelled for today's ride because every time we mop up the last remnants of the breakfast in front of us we're offered something else delicious to refill it. Our starting point for the ride is the On The Rivet luxury cycling retreat in Beaminster, near Bridport, and over breakfast, company founder, Jim Styrian, is taking us through some final checks of today's route on the map. Jim and I have combined our knowledge and while I'm already familiar with many of the roads we'll be covering, there will be a fair amount of virgin territory too. I'm particularly excited about the latter part of the loop, a coastal stretch promising panoramic views back across the shingle expanse of Chesil Beach and out to the Portland peninsula.

Rain is currently drumming on the skylight above my head, contrary to the weather forecast that promised overnight showers would die away. I use this as an excuse for another coffee and a further portion of homemade bread smothered in locally made preserves, to see what the next 20 minutes will bring. Thankfully, just as my stomach can take no more, the rain abates.

Game time

Swinging my leg over the saddle and rolling out of Beaminster it's still damp and the skies remain cloudy, but we're itching to get going. It's one thing getting wet on a ride, but Kim and I agree that actually leaving in the rain is a different matter, as we turn the cranks gently for these early strokes. Our Garmains chime almost in unison, informing us the GPS has found us on our route, and so it begins. 132km to go.

Those effortless pedal strokes don't last for long as we're practically straight into White Sheet Hill, a steep and unforgiving start to the day, with pitches up to 19%. Conversation briefly stops as we both deal with the gradient with what feels like wooden legs, as our muscles have been denied a proper warm-up.

Thankfully it's a short climb and soon we're into the kind of surroundings that will define this ride, flowing along narrow lanes and ↗

Below and right:
Weymouth has everything you'd expect of the quintessential English seaside town: promenade, deck chairs and miles of golden sand

ducking in and out of secluded rural villages as we travel east. It's a rollercoaster profile, but pleasantly so. The downhills allow us the luxury of carrying sufficient speed to make the uphills less daunting. In what seems like no time we're soaring downhill, crouching our bodies tightly, towards Cerne Abbas, the first of the key landmarks on today's loop (see p121), which we briefly stop to admire. My disc brakes 'ping' as the metal rotors cool from the heat generated on the steep descent a few moments ago.

The sun is trying to burn off the cloud so we're soon back on our way, and once again we need to call on the help of our inner chainrings as our mechs simultaneously scramble up the cassette in readiness for another steep ascent. Piddle Lane takes us back up onto the ridge and it's

tough going, the type of climb that progressively steepens and hits hard at the very crest, with a gradient that has both Kim and I craning over the front of our bikes in our smallest gears. Spurring me on is the knowledge that once we're over this we can fully let fly on the long, fast decent down into the Piddle Valley – home of the amusingly named Piddle Brewery – with long lines of sight making it safe to stay off the brakes.

Beside the seaside

We skirt the southernmost tip of the ancient market town of Dorchester and resume a direct path south towards the coast, where Kim and I are keen to push on to, knowing we'll have covered over a third of the distance and earned a coffee. We meet the coast in Weymouth, a quintessentially English seaside town with its deck-chair-lined promenade, seagulls, ice creams stalls, shops selling candy floss and sticks of rock, plus the familiar noises escaping amusement arcades. It's got the lot. Not to mention its miles of golden sand.

The sun is finally dispersing some of the cloud, so we're keen to maintain the flow and reach the heights of Portland before we stop for coffee. On the map the route looks a bit like a cartoon thought bubble, and we're now entering the pointy bit. By virtue of its out-and-back nature we could choose to bypass this segment, but we'd be missing out. To our left is the shimmering sea – scene of the 2012 Olympic sailing events – and on our right is the giant mass of pebbles that forms the spectacular Chesil beach (famous from

My disc brakes 'ping' as the metal rotors cool from the heat generated on the last steep descent

the Ian McEwan novella *On Chesil Beach*). In just a few minutes, at the top of the next climb, we'll be treated to a much better perspective on this phenomenal seascape.

The climb has Kim and I puffing and panting in perfect time, grinding out a low-geared rhythm, heaving our bikes left and right up the ascent that's at least broken up by a couple of hairpins as we scale the headland. The view is as predicted: spectacular. A monument to the Olympics stands proudly at the viewpoint on the summit above the coastline we've just ↗





The rider's ride

Giant Defy Advanced SL 0, £7,999, giantbicycles.com

I was eager to pitch the latest range-topping Giant Defy against this tough route because of the high praise Peter Stuart had given it in issue 35. It didn't take long to realise the Giant's capabilities. It dispatched steep gradients with ease thanks to a combination of its low mass and super-solid build. The exaggerated compact frame design results in a lot of exposed seatmast above the top tube for my leg length, which visually I'm not a huge fan of but, thanks to the extra flex it allows, made for a comfortable ride. The disc brakes were the icing on the cake.



traversed, and we stop to take pictures of our bikes leant against the iconic five rings.

We continue on our loop of the Portland peninsula towards another iconic landmark, Portland Bill lighthouse. It's still a fully functioning lighthouse, standing 40m tall, which has been a warning to coastal traffic since 1906. In centuries past the beaches and inlets around Portland Bill were a haven for smugglers. Today, though, they're more of a haven for rock climbers, who flock here to scale the vast sea cliffs.

As we continue around Portland there is one more stop to make: finally that coffee. With some relief we reach our recommended stopping point, Cycleccino, which is part cafe, part bike shop, where Kim and I indulge in a banquet of caffeine and calories.

Refuelled and ready, we descend the hairpins and are once again treated to an amazing view as we retrace our route back along Chesil Beach and pick up the road west that hugs the coastline. In around 30km we'll be back in Bridport and, as in the first quarter of the ride, we find ourselves flowing through idyllic, picturesque villages of

We are just a few kilometres from home when a narrow corner tightens just at the point the road surface is covered with a mix of cow excrement, straw and gravel

stone cottages and tiny village stores. Visible on the far right is another famous Dorset landmark – the Sir Thomas Hardy Monument – that sits atop the open landscape between Portesham and Dorchester. If we were feeling particularly perky it would be a great climb to add to the route, taking us back up to over 200m. Today, though, we pass up the opportunity and keep on track for Abbotsbury, a place renowned, as far as the tourist brochures are concerned, for its beautiful swannery, but as far as cyclists are concerned for the big climb out of the village.

Portland Bill lighthouse
is a popular tourist
attraction, and is still
functional in its role of
warning ships off the
jagged coastline



Do it yourself

ACCOMMODATION

On The Rivet lived up to its tagline as being a luxury cycling retreat (ontherivetuk.com). *Cyclist* stayed at its Axminster location, close to Beaminster, and it truly has all you could possibly desire for a special cycling experience. Expect to be treated like a pro and fed like a king, and don't pass up the opportunity to indulge in the sauna or outdoor hot tub.

THANKS

Thanks to Jim and Deborah at On The Rivet for excellent hospitality that went far beyond the basics of accommodation and meals. Also to Henry Bloxham for a long day in the car ferrying our photographer Geoff around, when we know he'd rather have been pedalling.



Fading fast

As I get stuck into the climb I know it's going to peak at 17%, so I try to keep something in reserve, but I can feel my energy fading fast, and my body slowing down, like a robot running out of battery power. The man with the big hammer is looming over me, heckling me, teasing me. I'm about to bonk in spectacular style. I know this because I've started sweating behind my knees, something that weirdly I know my body does in the moments before the mushroom cloud goes up. My legs have faded completely and I'm holding up a line of traffic that is patiently building behind me. I might not have reserve battery back-up to help me but I do, however, have a cunning plan. I know full well the top of this climb is going to deliver some of the best and most spectacular scenery so far, with far reaching views back across the coast line. 'No panic', I think to myself. I call a halt to proceedings in the next layby so I can 'admire the view' (and scoff a quick energy bar).



It's practically all downhill from here to Bridport and any rises are tackled with momentum so my recovery can continue a while longer. As we freewheel through Bridport's pretty high street we're only about 10km from the finish, and with no more big climbs we've broken the back of this ride now.

As so often happens on long rides, our only near accident of the day happens when we are just a few kilometres from home, when a narrow corner unexpectedly tightens just at the point the road surface is covered with a mix of cow excrement, straw and gravel (something else that Dorset's rural lanes are renowned for). Thankfully we survive unscathed, and in hindsight the incident, plus the big shot of adrenalin now coursing through our veins, was probably helpful to deliver us back to base with broad smiles on our faces after what has been a day to remember for so many reasons. I can't wait to come home and ride it again. ♦

Stu Bowers is deputy editor of Cyclist and a man who always enjoys home discomforts





Comfort Zone

At a factory in northern Italy, a production line has been quietly turning out one of the greatest cycling innovations of the modern era. The creator? Elastic Interface. The product? The seat pad in your bibshorts

Words **JAMES SPENDER** Photography **FRED MACGREGOR**





Unless you follow Italian football you've probably never heard of San Vendemiano. With a population of 10,000, this town

has little to put it on the map save for the fact that one of Italy's favourite sons, centre forward Alessandro Del Piero, grew up here in the shadow of the Dolomites. Yet this isn't San Vendemiano's sole contribution to sport or the world at large. True, Del Piero may have won 91 caps for Italy, but look a little closer and San Vendemiano boasts an even bigger sporting leviathan: Elastic Interface.

You might not be familiar with Elastic Interface, but if you look inside your bibshorts you'll find its invention: the soft, stretchy, anatomically shaped chamois or seat pad. And with 1.8 million sold last year alone, there's a fair chance the seat pad in your shorts will have been made by the company from San Vendemiano. Now that you're sitting comfortably, let's begin...

Stitches in time

Elastic Interface was founded in 2001 by Marino De Marchi and Stefano Coccia. For those with an eye for fine Italian cycling apparel, De Marchi will be a familiar name, and indeed there is a close link between the companies.

'Stefano and I are cousins, and our grandfather was Emilio De Marchi, who founded De Marchi clothing the year after the Second World War ended,' says Marino De Marchi, a tall, tanned man with a lithe cyclist's physique. 'We both worked for De Marchi until the end of the 90s – I was focused on production, Stefano was general manager – but the clothing market was flat on innovation. We decided there was a big space – a wide blue ocean in front of us – when it came to cyclist comfort.'





'My cousin, Mauro – Stefano's brother – is still in charge of De Marchi clothing, and we share our offices here in San Vendemiano, but in 2000 Stefano and I left to set up CyTech [the company that created and owns the Elastic Interface brand]. Our main focus was that the pad is the heart of the cycling short, yet we felt the seat pads on offer then were at odds with the direction shorts had gone. The shorts were made of Lycra, but the fleece pads sewn into them were totally stiff. Many pros were even riding with no seat pad at all.'

De Marchi and Coccia's solution was to develop a seat pad that could stretch as the rider pedalled, while offering 'protection, but without the Pampers effect, shall we say'.

Those first-generation seat pads were developed with Tony Maier, the

'The shorts were Lycra but the fleece pads were totally stiff. Many pros were even riding with no seat pad at all'

Top left: One of the many giant rolls of fabric makes its way into the cutting machine before (left) a technician positions the serrated die-cutter, ready for the machine to stamp out the next batch of material

owner of Assos, which can count itself as the first manufacturer, in 2001, to have produced cycling shorts with seat pads that stretch in all directions. Yet the concept, according to company legend, dates back much further.

'In the old days seat pads were called chamois and were made of deerskin,' says De Marchi. 'My

WHAT ARE YOU SITTING ON?

There's a lot more to seat pads than meets the backside...

There is rather a lot going on inside an Elastic Interface seat pad. Firstly it is contoured in line with the body, with male pads featuring a channel down the middle to relieve pressure on the perineum, while female pads feature a raised, smooth section in the middle to alleviate chafing. Female pads are noticeably wider too, while male pads are longer.

'There are various different densities of foam in a top-level seat pad,' says founder Marino De Marchi. 'To support the sit bones [which carry most of the rider weight when seated] we use an ultra-high-density foam, 120kg/m³, then high-density foam, say 80kg/m³, to cushion the perineal area and sit bones, and medium-density foam to protect the skin around those areas.'

The placement and shape of these pads is worked out through pressure mapping (using sensors) to ascertain the stresses placed on the body – and rider feedback. 'Some pad designs are ridden in excess of 30,000km before we consider them ready to go into production.'

Marino De Marchi started Elastic Interface in 2001. He's the grandson of Emilio, the founder of the famous De Marchi cycling apparel brand



grandfather would travel to Austria in a van to select the finest deerskin for the chamois. When Stefano was old enough he would travel with him, and sleep on the skins on the way home. One day when he woke up it occurred to him how uncomfortable the skins were to sleep on, and that's when the idea of creating a softer, more comfortably chamois took root.'

Partnering up

Like most businesses in the cycling industry, Elastic Interface develops its products in-house but uses external suppliers and sub-contractors to source materials and produce the finished product, which it then sells to other manufacturers to stitch into their shorts. Italian textile company Miti supplies the fabrics, while the foams, and in some instances gels, ◉

► used to give the pads cushioning come from an undisclosed source.

'The fabrics from Miti are sent to our supplier who laminates the material to the foam. It comes back here in these giant rolls and they start the cutting process,' says De Marchi, as he opens the door to the shop floor of the Ulma factory that is contracted to produce Elastic Interface pads.

The factory is owned and run by Francisco Ullise Martin and his sons, and it attributes 90% of its work to orders from Elastic Interface. Next to De Marchi, Ullise Martin cuts a diminutive figure, and not one you might immediately associate with cycling, so it's curious to think he's been almost entirely responsible for Elastic Interface's output for the last 15 years, and might very well have overseen the making of the pad you sit on when you go riding.

'Here we make up to 5,000 pads a day in the summer months,' says Ullise Martin. 'In the catalogue we have at least 50 styles of pads, but we are already up to manufacturing code 1,400. Think of the codes as a style, which means every time we make a unique pad - a different shape, colour, foam density - there is a new code. That's a lot of different pads we have had to think about over the years!'

De Marchi explains that along with the 'stock' catalogue, Elastic



'We showed our new pads at Eurobike. Interbike came just 20 days later, and by that time another manufacturer had copies of our pads on their stand'

Interface makes custom pads for its wide variety of clients, which includes Rapha, Specialized and Gore plus, of course, Assos.

'You won't necessarily see our logo on those pads, and you won't see those pads in any other shorts - they've been designed exclusively for those customers. But we do sell anything from our catalogue to anyone who wants our seat pads, provided you place a minimum order of 200.' So what if you wanted customised pads?

'Customised pads are different. They require a minimum order of 5,000 pieces just to make the order worthwhile as we have to make special moulds and buy in different

Above: Metal stamps are used to brand each seat pad

Above right: A technician inserts assembled constituent parts into heat presses to be 'baked' and formed into finished seat pads

Right: Elastic Interface sub-contracts its manufacture to the Ulma factory nearby, owned and run by Francisco Ullise Martin, pictured

materials.' Not a problem for the likes of Rapha and Assos, however, who apparently purchase around 80,000 and 200,000 pads per year respectively. That's a lot of bibshorts.

Productivity level

Looking around the factory it's interesting to note a number of similarities between the process of making seat pads and that of making carbon fibre bicycles. Roll upon roll of brightly coloured fabrics that have been laminated - that is, glued - to a variety of different density foams are stacked high to the rafters, much like the rolls of carbon prepreg sheets that you'll find in a carbon fibre production line.

The rolls are up to 70m long, and from each is taken a sample that is sent back to the head office, such that when it comes to quality control a batch of seat pads can be traced back to an individual roll. Only then does the roll enter into the production line, where huge presses with custom-made metal die-cutters (think pad-shaped biscuit cutters) stamp out row upon row of different sections of material that comprise each seat pad. For smaller, more complex pieces, laser cutters are employed.

'Our top-line Road Performance Comp pad is made up from seven pieces,' says De Marchi. 'For custom orders, the number of individual components can nearly double.'



The Ulma factory deals specifically with thermo-moulded seat pads (another factory nearby still makes the traditional hand-stitched type), so once the shapes have been cut they're assembled strategically into moulds.

Over time the shaping of such moulds has become ever more elaborate, and today many moulds are three-dimensional, bearing striking resemblance to the kind used to create carbon components – a metal female mould machined from a solid block of billet with a matching male mould, each costing up to £3,500.

Once the pieces are in place, the moulds are put between heat presses and ‘baked’ at around 200°C, bonding the parts together in a homogenous piece. The precise timings and temperatures differ from pad to pad, and it’s getting this right that’s crucial – if a pad is in for too long or baked at too high a temperature the material will be compromised, bobbling, burning and hardening.

Executing this process is an exclusively female workforce, again a concept not unfamiliar to the cycling industry. ‘So much of this work takes accuracy and precision, and women are just so much better at that than men,’ says Ullise Martin knowingly.

Soft sells

Of course Elastic Interface is no longer alone in the world of stretchy seat pads. Although patents were filed, and continue to be, other manufacturers have found ways around them.

‘A few years ago we showed our new pads at [trade show] Eurobike,’ says De Marchi. ‘Interbike [another show] came just 20 days later, and by that time another manufacturer – who I will not name – had copies of our pads on their stand! It used to bother us, but we’d rather put our money into staying ahead than suing others.’

To that end, Elastic Interface has a long-standing relationship with the University of Padua’s sports



'It took a while to convince the pros. They didn't want to lose contact with the saddle no matter how much it hurt'

Above: Some of the hundreds of die-cutters Elastic Interface uses to cut the shapes for its pads

Below: A familiar name adorns this mould – just one of Elastic Interfaces many custom clients

science department, which it uses to better understand not only a rider's anatomy, but how being comfortable affects performance on the bike.

'We've proved from studies that even if your body seems to tell you it doesn't need protection it is actually still suffering,' says De Marchi. 'We've proved that by being more comfortable you use oxygen more efficiently so can generate more power for longer – because if you're uncomfortable you're continually moving about on the saddle and wasting energy. It took a while to convince the pros. They didn't want to lose contact with the saddle no matter how much it hurt as they

thought that would affect stability, but once they'd tried our pad a few times they realised the benefits. Now they are always asking for more comfort, more protection, not less.'

De Marchi admits that, as a concept, the elasticated pad is quite simple, yet its ubiquity in modern bibshorts speaks for itself, and the fact Elastic Interface is the biggest supplier in the market (around 25% share, and nearer 90% at the top end) is a clue to how well thought of these seat pads are.

'It's hard to say how many races we've won, because we don't sponsor any teams. The clothing manufacturers sponsor them, and in many instances we supply that manufacturer with seat pads. So all of Team Sky [Rapha] or Giant-Alpecin [Etxeondo] race and win on our pads. And there are many riders who send their bibshorts to us, or even come for fittings, who want our pads stitched into their shorts. We cannot say who, as they still have their sponsors to look after,' De Marchi says with a wink.

With that sort of pedigree, it's a safe bet many of us will be sitting on an Elastic Interface seat pads for many years to come. ♦

James Spender is staff writer for Cyclist and an expert on sitting



SEATING PLANS

Four steps to a top-end Elastic Interface seat pad



1. Outer fabric laminated to foam is cut to the correct shape



2. Three different densities of foam are laser cut to form the cushioning



3. The parts are tacked in position with a final layer of fine fabric



4. After a stint in a heated mould, the final pad emerges

The **46 AERO** is one of Reynolds' signature wheels as its DET™ rim profile provides the optimal balance of aerodynamics, stiffness and comfort in just about any discipline. As a great all-rounder it excels in road races, criteriums and time trials or simply for your best ride/sportive experience.

Clincher 1505g [set]
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Ride the Best, #RideReynolds





MONEY NO OBJECT

If you built a bike from the most expensive parts available, what would you end up with? A bike like this...

Words **SAM CHALLIS** Photography **DANNY BIRD**

As children we all did it, searching through cycling magazines to find the parts that would make up our dream bicycle. Some of us have never really grown up, and at *Cyclist* we still obsess over hi-tech components and shiny accessories. The only difference is that these days we are in the happy position of being able to bring all those special parts together to actually create a bike that will have Saudi princes and Russian oligarchs reaching for their platinum credit cards.

The premise is simple: find the most expensive stock items available and assemble them. Of course, this doesn't mean these are the *best* items – that's a subjective matter and, sadly, we are not in a position to test the finished product to see how it performs. Also, we used only stock parts – that means no custom-built frames or limited edition components. We avoided custom because, by definition, there's no limit to how much you could spend on a bike ◻



Once you decide it needs to be forged from pure gold and encrusted with diamonds.

Having tracked down the parts for our MEB (most expensive bike), we then contacted the suppliers and asked them to explain why their handiwork is so highly priced. This is the result...

Frameset: Storck Fasenario 0.6, £6,649

The heart of the build was the most difficult to determine. Even bespoke framesets plateau in cost at around £6,500, but at this price the lines between stock and custom begin to blur. Therefore, we chose to spec the Storck Fasenario 0.6 frameset, which at £6,649 is marginally the most expensive and remains a true stock option.

'The frame is constructed using Storck's most complex proprietary manufacturing process, using HMF carbon fibre, our finest grade,' says Storck's Ian Hughes. '3D-CAD imaging was used to determine the lay-up of the unidirectional

carbon fibre to optimise stiffness and vibration dampening. This makes the frame one of the most efficient and comfortable available off-the-peg. Weight is also kept to a minimum by using a one-piece monocoque construction that undergoes Storck's patented Void Vacuum Controlled process, which claims to eliminate any imperfections in the carbon lay-up and reduce the resin content by 33%.' As a result, the frame, fork and integrated brakes weigh just 1,310g.

'The challenge was to produce a road bike frame that would exceed the Fasenario 0.7, which held the title of "Best Bike in the World" [as judged by Germany's *Tour* magazine] for three years. The 0.6 subsequently won the award so we achieved our goal.'

Wheels: Reynolds RZR 46 Team, £4,499

In the search for the most expensive wheels, our first stop was German brand Lightweight, which

Extravagant alternatives

A few items that didn't make the final build



Continental Grand Prix 4000 S II tyres, £49.95 each

If you prefer clinchers to tubs, these pricey numbers from Continental are a solid bet. Pair them with Eclipse Ultra Lite inner tubes at £44.99 each (silverfish-uk.com)



Chris King Press Fit 30 Ceramic Bottom Bracket, £225

The Storck frame required its own bottom bracket, but Chris Kings are hard to beat. These sealed bearings are ceramic instead of steel, making them lighter and smoother.



EeBrake MRK3 by EeCycleworks, £499

Again, the Storck frame came with integrated brakes, but if we'd had a choice the MRK3's forged aluminium structure combines low weight with high strength and durability.



Ceramic Speed 3D Printed Ti Pulley Wheels, £800 (approx £568)

Built using titanium dust and sintered together using a laser, these jockey wheels are lightweight and durable.

When it comes to road helmets, I accept no compromises. The constant urge for aerodynamic helmets makes riders forget they need ventilation for optimum performance. This is where the Icarus comes in; compact enough to be aero and an open design for perfect ventilation. On top of that, It looks great!

FOR THE FULL STORY, CHECK:
BBBCYCLING.COM/BIKE-WEAR/HELMETS/BHE-05

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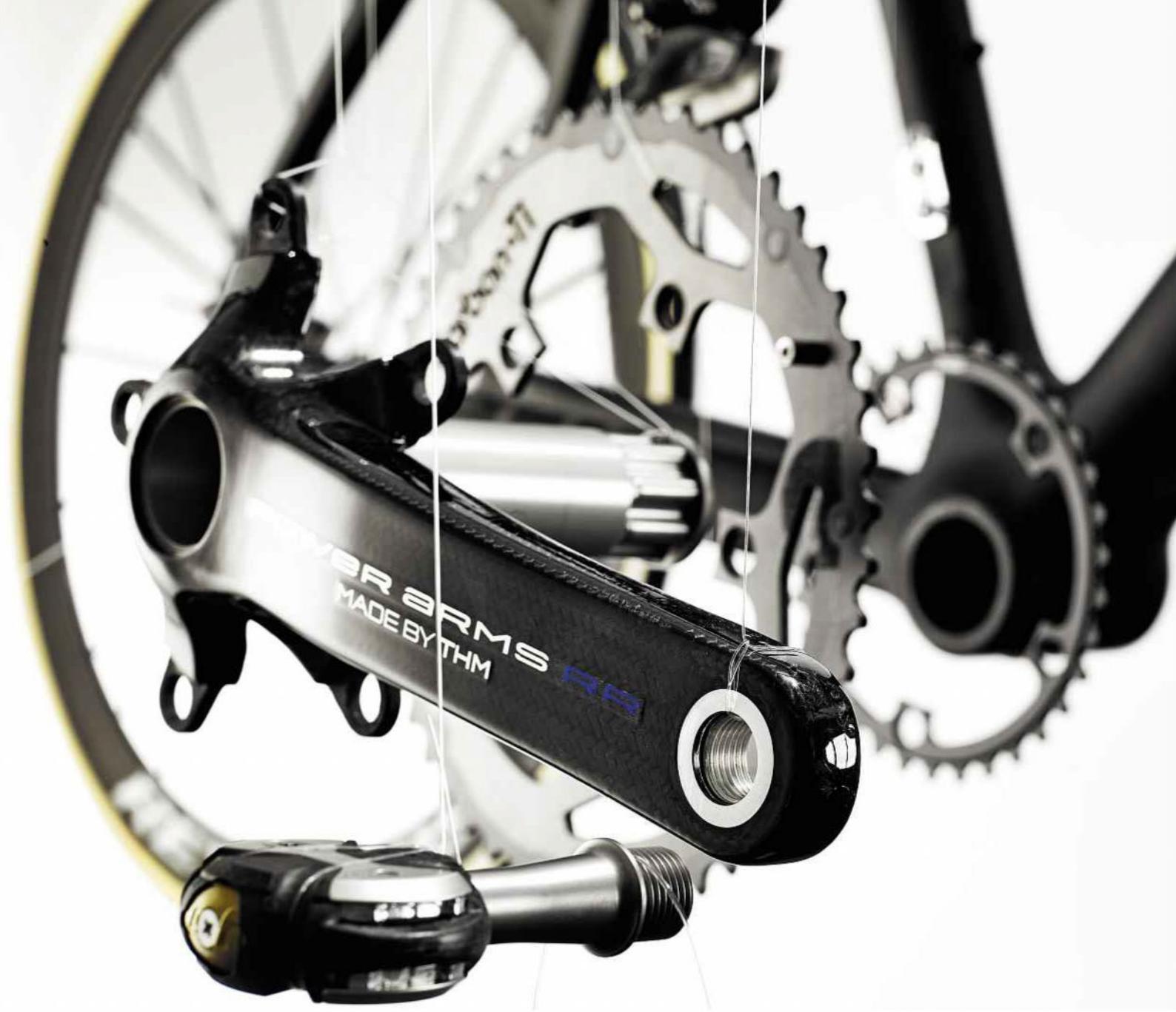
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© specialises in insanely priced hoops. However, our research revealed that the biggest pricetag is attached to the Reynolds RZR 46 Team tubular wheels, at £4,499 for the pair.

Their narrow, pointed rim profiles have Kevlar reinforcement and buck the trend of rounded deep-section rims. Reynolds says the RZR's profile is inherently lighter and, thanks to the Swirl Lip Generator (SLG), more aerodynamic. The SLG is a 0.9mm lip on the rim's leading edge that Reynolds claims smoothes airflow as it passes onto the aerofoil-shaped spoke faces, translating into a 12.5-second gain over 40km. Reynolds also claims to have eliminated the inconsistent braking that blights some carbon rims. It has developed a 'Cryogenic Glass Transition Braking System' – a redesign of the brake track laminate and pads (£60 for four). The laminate is now temperature-conductive to withstand higher

extremes than regular laminates. Plus the rear wheel includes a 'torque flange', a third layer of spokes that Reynolds claims increases torque efficiency, and therefore performance.

Tyres: Challenge Criterium Seta Extra, £110

At £110 per tyre, the 250g Challenge Criterium Seta Extra tubular tyres are handmade with a silk carcass at 300 threads per inch, so have a higher thread count than most bed sheets. These tyres aren't vulcanised either, ensuring the tyre is supple and responsive, while the rubber compound achieves high grip with low rolling resistance, making it the choice of many pros for Classics races and Grand Tours alike.

Saddle/seatpost: Dash Carbon Standard Post Combo, £799

It's a common theme in the bicycle industry – as weight decreases incrementally, price increases

Storck's G3 cranks, made in conjunction with THM Composites, cost a mighty £1,100 thanks to their complete carbon fibre construction and impressive stiffness-to-weight ratio

The £385 cost of the Super Record cassette is attributable to the multiple titanium sprockets, and the 'Ultra-Shift' tooth design to improve shifting

exponentially. This rule certainly holds true for the £799 Dash Carbon Standard Post Combo.

'Dash is a small independent company in Boulder, Colorado,' says James Heath of Ubyk, Dash's UK distributor. 'Its saddles are handmade and are some of the lightest products on the market. With the Standard Post Combo, Dash obsessed over the balance of form and function.' The fruit of this approach has allowed a fully adjustable seatpost combination with a weight as low as 112g, depending on specification.

Chainset: Storck Power Arms G3 cranks plus Carbon-Ti chainrings, £1,600.98

To go with our Storck frame, the most expensive cranks we could find were the 400g Storck Power Arms G3 cranks, retailing for £1,100. Storck says the price is down to their impressive stiffness-to-weight ratio, which comes from the arms' full carbon fibre construction.

Adorning the crank arms are Carbon-Ti's chainrings. The rings have a carbon internal structure mated to titanium teeth. 'Carbon-Ti's chainrings are completely made in Italy,' says Tom Oborne of Evolution Imports, Carbon-Ti's UK distributor. 'It would rather keep production costs high than risk low quality and poor quality-control checks in the Far East. The titanium teeth offer exceptional shifting performance and are super durable, and the internal carbon keeps weight down while maintaining stiffness.'

The 74g outer ring has an RRP of £267.99, and the 32g inner ring comes at £232.99.

Groupset: Campagnolo Super Record EPS, £1,876.96

Our MEB wouldn't be complete without a bit of Campy, and a large chunk of our groupset is provided by Campagnolo's Super Record EPS (the price is for the combined parts specced). The EPS rear derailleur uses carbon fibre and titanium, but that's not the only reason for the hefty pricetag. The groupset is still made in Italy and carries with it a near-religious heritage having once been the sole choice of the pros.

The £385 cost of the Super Record cassette is attributable to the multiple titanium sprockets, and the use of the 'Ultra-Shift' tooth design to improve shifting and decrease chain stress.

The chain is one part of the groupset where Super Record has been usurped in favour of the £86.99 KMC X11SL DLC chain. Its 243g weight is made possible by machined-out plates, and while light weight is usually at the expense of durability, the chain's diamond like coating (DLC) increases wear resistance to prolong chain life.

For the brakes we switched to Nokon cables, which come with a suitably weighty pricetag of £139.95. Nokon's patented bead-like cable outers feature linked segments that reduce cable friction through bends and stabilise pressure internally so braking modulation remains precise and smooth.

Bar and stem: Enve SES Aero Road, £605

Durability and quality rarely come cheap so it should be of little surprise that Enve contributes handlebars and stem. The £375 SES Aero Road

Now that's expensive

The sky is the limit if you go bespoke

SARTO 18K, £18,000

Featured in issue 36 of *Cyclist*, the Sarto 18K includes 18-carat gold lettering, and the seat, bar tape and chainstay cover are made from crocodile leather. Each bike is custom made and tailored specifically to the owner, and there will only ever be 25 made.



BMC IMPEC LSW LAMBORGHINI EDITION, €25,000 (£18,000)

In celebration of its 50th anniversary, supercar producer Lamborghini built this special edition BMC Impec. Made in Switzerland, BMC produced only 50 to accompany the release of the £3.1m Lamborghini Veneno.



DAMIEN HIRST BUTTERFLY TREK MADONE, \$500,000 (APPROX £320,379)

Ridden by Lance Armstrong in the 2009 Tour de France, this modified Madone had real butterfly wings lacquered to the frame by artist Damien Hirst. It sold at a charity auction for \$500,000 in 2009.





The final cost comes to £17,204.86, which puts it a shade over £6k more than the most expensive stock bikes

Speedplay justifies its cost not through light weight, but through aero gains and heavily researched ergonomics. A narrow, aerofoil-shaped top flows into flared drops, moving the rider naturally into a more aerodynamic position but retaining the option for aggressive handling in the drops.

Brand manager Ash Matthews explains that Enve had broader aims than just weight with its £230 carbon stem: 'Our objective was to create a responsive connection between the bike's front end and the handlebar, using a combination of titanium and unidirectional carbon fibre.'

In stark contrast to the ultra-modern spec so far, the bar tape from Cinelli is decidedly retro. The £68.99 Imperial Leather bar tape is made of cowhide, has natural shock absorbing properties and, much like a fine wine, improves with age. Production and raw material costs keep the price close to five times that of standard bar tape.

Pedals: Speedplay Nanogram Zero Titanium, £599

While pedals are traditionally not part of a bicycle specification, Speedplay's £599 Nanogram Zero Titanium pedals were a must.

Speedplay took its existing Zero pedals and re-engineered them for weight reduction and performance optimisation. When explaining the cost, Rob Jarman from i-Ride, Speedplay's UK distributor, says, 'It's simply a case of materials. It was about creating a pedal with no compromises. The pedal bodies are made of carbon-reinforced thermoplastic, and alloy and titanium replace steel in the spindles and cleats.'

The final tally: £17,204.86

The total for the entire build comes to £17,204.86. That puts it at a shade over £6,000 more than the most expensive stock (ie, not custom) bikes we've featured in the magazine. To date the highest pricetag for a stock bike is shared by the Trek Émonda SLR10 and the De Rosa Protos, both retailing at £11,000. The MEB bike weighed 5.69kg. Impressive, but not the lightest out there.

What we can't tell you is the performance credentials of our expensive bike (everything needs to be returned in pristine condition), so if there are any Lottery winners out there who are tempted to recreate *Cyclist's* MEB, we'd love to hear about how it rides.

Stockists

How to build it yourself

Storck Fasenario 0.6 frameset, £6,649, storck-bicycle.cc

Reynolds RZR 46 Team wheelset, £4,499, upgrade.co.uk

Reynolds Cryo-Blue Power brake pads, £59.99, upgrade.co.uk

Challenge Criterium Seta Extra tubular tyre, £110 (each), paligap.cc

Dash Carbon Standard Post

Combo seat/seatpost, £799, ubyk.co.uk

Storck Power Arms G3 cranks, £1,100, storck-bicycle.cc

Carbon-Ti outer chainring, £267.99, Carbon-Ti inner chainring, £232.99 evolutionimports.co.uk

Campagnolo Super Record EPS

Ergopower levers, £396.99; Campagnolo Super Record EPS front derailleur, £528.99; Campagnolo Super Record EPS rear derailleur, £565.99; Campagnolo Super Record 11-29 cassette, £384.99, chickencycles.co.uk

KMC X11SL DLC chain, £86.99, chickencycles.co.uk

Nokon Carbon Brake Cable Kit, £139.95, windwave.co.uk

Speedplay Nanogram Zero Titanium pedals, £599, i-ride.co.uk

Enve SES Aero Road handlebars, £375, saddleback.co.uk

Enve Road stem, £230, saddleback.co.uk

Cinelli Leather bar tape, £68.99, chickencyclekit.co.uk

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Hot metal

Aluminium may have been usurped by carbon as the frame material of choice, but not only has it refused to die, it's making a comeback at the top end of the market

Words **MIKE HAWKINS** Photography **FRED MACGREGOR**

Aluminium's reign at the top of the cycling tree was relatively short-lived. As a material for pro race-winning bikes, it only really took over from steel in the 1990s, and by the start of the new millennium the tide was already turning in favour of carbon fibre.

Marco Pantani was the last man to win the Tour de France on an aluminium bike – a Bianchi Mega Pro XL – in 1998, and after Spaniard Igor Astalao won the 2003 Road World Championships aboard a Cannondale CAAD7, aluminium bikes soon disappeared from the pro peloton altogether.

It may seem that aluminium (more specifically aluminium alloy) has been relegated to the cheap-and-cheerful end of the road bike market, yet several manufacturers have continued to make top-end, race-ready alloy road bikes, and other manufacturers are even returning to alloy as an alternative to carbon.

Trek has recently released the Émonda ALR, an alloy addition to a range that initially included only its lightest carbon bikes. BMC too has just produced an alloy version of its Tour-winning Teammachine (coincidentally also called ALR). Specialized has had an S-Works edition of its popular aluminium Allez bike for some time, that retails ➤



'There are a few brands who never walked away from aluminium, who continue to push and are still having success'

► at a whopping £7,500 complete with Dura-Ace Di2 groupset, and Cannondale continues to refine its expertise in the alloy arena with the launch of the CAAD12 to supersede its highly regarded CAAD10.

Second coming

So why is the bike industry suddenly so interested in old-fashioned metal when it has hi-tech black fibres to play with? Thomas McDonald of BMC, a brand with a strong history in the aluminium sector, says, 'In general, what we saw with carbon was it creeping into some really entry-level price points. The cost of the frame meant that the rest of the bike was being compromised [to meet the price point] and left retailers short of confidence.'

Where once carbon bikes were reserved for only the pros and the well-heeled, they have increasingly become more affordable, but because even the cheapest carbon frames are reasonably expensive to produce, brands have been using cheap wheels and components to keep the overall price down, which can result in a poor ride quality and ultimately negate all the benefits of the carbon frame.

Even the most advanced aluminium frames are comparatively cheap to produce when compared to carbon fibre so, when they're matched with high-end components, an alloy bike can potentially offer a superior overall ride experience compared to a lower-end carbon bike at a similar price.

We should point out that cauldrons of molten alloy are not really part of the hi-tech processes used in modern bike manufacture (but they are undoubtedly impressive to look at)

'Also I think there are a few brands who never walked away from aluminium, who always continue to push and who are still having success,' McDonald adds. He doesn't mention any names, but most likely at the top of his list is Cannondale, arguably the high priest of aluminium, basing its reputation on race-winning alloy bikes that carry the name CAAD (Cannondale Advanced Aluminium Design).

Cannondale's senior project engineer, Chris Dodman, gives us his take on why Cannondale has never truly let alloy go: 'Having had so much experience in designing, testing and manufacturing aluminium frames since the late 1980s we have always seen the potential of remaining in aluminium. Other manufacturers may have switched focus to different materials more than we have, but aluminium's our heritage and that's a key driver here.'

Neil Webb, founder of British bike brand Bowman, explains more of the benefits: 'Bowman has gone down the metallic, as opposed to composite route, because of the design flexibility offered. Our first frame was destined to be one that could be raced, but still be accessible price-wise, so that kicked steel off the table. Race-weight steel frames are possible – just – but are prohibitively expensive. Titanium has similar issues. Which left aluminium.'

'Then the design process is so much faster,' he adds. 'If you buy enough tubing for three frames, you can get three ▶

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METAL GURUS

Top-end alloy bikes from the big brands

Cannondale CAAD12 Disc, £2,600 (provisional)

cyclingsportsgroup.co.uk



Trek Émonda ALR 6, £1,700

trekbikes.com



BMC Teammachine ALR01, £1,599

evanscycles.co.uk



‘different prototypes made up relatively quickly and test them all. With carbon, you’d need to develop and make three different moulds (or at least mould adaptations) before you can begin to make your prototypes, which is excessively costly and very time consuming.’

95% aluminium

Aluminium might allow faster and cheaper development of frames, but just what are its properties as a frame material? Alloys of aluminium are classified as wrought alloys and come in a bewildering number of precisely controlled mixes depending on what characteristics you want from it. Aluminium is the primary metal, usually at around 95% by weight, but others ingredients such as silicon, iron and copper are frequently added to create each blend that is then classified by a number, such as 7005, or if it’s a manufacturer’s own formulation it will carry their name as a proprietary blend.

Over the years the most suitable alloys for various bike parts have been refined to the point that today you’ll find the vast majority of aluminium parts, from frame tubes to hubs, come from one of six grades. They’ve been selected for their characteristics both in terms of how they stand up to the abuse of riding but also what’s actually involved in forming the component part. For instance, does it require forging, machining or welding? Some of the larger manufacturers have developed their own alloys in an effort to optimise the properties required to suit their preferred manufacturing techniques, particularly in the search for reduced wall thickness in tubing to keep weight low while maintaining strength, durability and ride quality – at a cost.

BMC, however, seems happy to stick with the widely available alloys and instead concentrate on developing tube shapes to form the characteristics of the ride. ‘Marketing jargon aside, most brands use the same types of aluminium, just as we are all operating off the same types of carbon,’ says McDonald. ‘Yes, there are very subtle differences in materials but effectively what we have learned is that tube shaping actually makes more of a difference than the type of material we use, within the bounds of high grade aluminium. So the stance we took with our latest alloy frame – the ALR Teammachine – was to go the extra mile and exercise some radical tube shapes, even though it’s not the most cost effective thing for us to do.’

Cannondale claims it was equally focused on the tube design side of the process when producing its new CAAD12 aluminium frame. ‘The CAAD12 is a radical frame in terms of the way we approached the design,’ says Dodman. ‘The way the industry was designing frames was to follow a building block-like process. The analogy I use is this: if

‘An aluminium bike is going to feel like it transfers power faster, and is usually lighter compared to carbon at the same price’



you're planning a route from A to B across a city you know, you'll link up all the bits you have in mind to create your route, whereas if you simply put your destination into a modern GPS you'll likely get a more efficient route, taking into account all the variables that will affect your journey. It will likely not be the route you would have chosen.'

What Dodman is alluding to is that previous experience and knowledge can be incredibly valuable, but sometimes your worst enemy, preventing you from really considering what the alternatives might be. A completely new frame design sometimes requires you to throw out those old building blocks and let available technology guide you.

So what's his GPS? 'We call it Tube Flow Modelling,' Dodman says. 'We completely changed the way we modelled tubes from the outset – even the way we put the information in the system and the way we let go of a lot of the control we used to feel that we needed on certain things. It allows the tube to flow from end to end around all the constraints in as smooth a way as possible.' (Read more about this in an upcoming piece on the new CAAD12).

Some of the recent advances that bike manufacturers have made with tube shaping in carbon fibre are now being applied in aluminium, too

Born again

The irony here is that aluminium alloy is being rejuvenated and brought back to manufacturers' line-ups through technology that has been learned, modelled and refined by its replacement: carbon. By focusing on tube shaping in metal frames with the understanding of what ride characteristics were desirable, based on the directions that carbon frames have taken them, manufacturers have been able to breath new life into aluminium.

To try to unravel some of the differences both in terms of weight and cost we spoke to Italian tube manufacturer Dedacciai, one of only a very select group of tubeset manufacturers that also produces its own bike range, in both carbon and aluminium. We've already alluded to the fact that carbon costs more and weighs less than aluminium, but by just how much?

Dedacciai Strada's export manager, Max Gatti, puts it like this: 'If we compare high-quality products, our road racing aluminium frame usually weighs 1,100-1,300g, and a road racing carbon frame weighs 900-1,100g. The ➤



CALL ME AL

The pros and cons of aluminium frames

PROS

- Cheaper raw material – it takes less energy to extract, is the most abundant metal in the earth's crust and costs relatively little to process.
- Cost-effective to prototype – compared to making a carbon mould it's far cheaper to make a one-off frame.
- Ride feel – while cheap aluminium bikes can be harsh, quality aluminium has a ride feel that is respected and loved.
- Crash resistance – it's not unbreakable, but should survive better than carbon (and be cheaper to replace).
- Highly recyclable – probably not something we'd have got excited about a decade ago but these days it's essential to consider.

CONS

- Image problem – aluminium can seem outdated in this age of carbon fibre.
- Tube shaping – some tube shapes just aren't effective when made in metal, so there are limitations in design directions.
- More weight – it's not always the case, but aluminium frames are generally heavier than carbon.

difference of raw material costs is approximately 1:4 [in favour of aluminium].'

Cannondale's Dodman estimates the cost ratio to be slightly higher. 'As a raw material aluminium is about one sixth of the price of carbon fibre prepreg, and a top-end aluminium frame costs about half what an entry-level carbon frame costs in just materials and labour.'

Costs, then, are heavily skewed in favour of alloy, but that's only part of the story. Trek Bikes senior product manager Ben Coates says, 'It's a fundamental fact that aluminium bikes can be made for a lower cost than carbon, so if you value higher wheel spec or a higher-tier groupset, you're effectively trading them for carbon fibre. As for the other benefits, an aluminium bike is going to feel like it transfers power faster, and is usually lighter compared to carbon at the same price. So it depends on your use and your values. Everyone knows a crit racer on an aluminium bike can crash it and not be as worried about the cost of replacing a frame. And there's still a chance you might be able get up and race it to the finish.'

Making the choice

With this renewed interest in aluminium and an influx of mid/high-end race-ready frames, an overlap is forming in the market where consumers may well find that some

aluminium bikes are on sale at a similar or higher price to some carbon models. So, if you go into a bike shop with a grand or so to spend, should you opt for a carbon bike or an aluminium one?

Cannondale's product manager David Devine says, 'Remember that not all carbon is created equal.'

When you're shopping at a £1,300 price point the carbon is often moulded with the price in mind, and the result is frames at this price are regularly heavier than aluminium. Our CAAD12 weighs 1,098g in size 56cm. We also tried to narrow the gap between aluminium and carbon in terms of the ride, matching the stiffness numbers and comfort of our Evo carbon frame. But from there [due to lower frame cost] customers can receive greater spec price value from the CAAD12 compared to the Evo platform.'

At a particular price point – £1,000 to £1,500 – it could be that an aluminium bike is lighter, just as stiff, and significantly better specced than its carbon rivals. There will always be those who feel aluminium is

simply not as desirable as carbon, but if you can see past the issue of perception then you are only left with one other factor to consider: how best to sneak another bike into the garage without the other half noticing. *

Mike Hawkins is a freelance cycling journalist who remembers aluminium when it was the hot new material

'Everyone knows a crit racer on an aluminium bike can crash it and not be as worried about the cost of replacing a frame'

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Halfway up the Cauberg, the field that was tightly packed at the start (below) is thinning out dramatically



False flat

The Netherlands is famed for its lack of hills, so how come the Amstel Gold sportive manages to pack in over 2,000m of climbing?

Words **MARC ABBOTT** Photography **RICH MACIVER**

Salkenburg has a proud cycling heritage. I'm here on the weekend of the Amstel Gold Race, and this once-fortified town in the south of the Netherlands is decked in flags and banners. Amstel Gold is one of the three annual Ardennes Classics one-day races, despite not actually being in the Ardennes (the other two are La Flèche Wallonne and Liège-Bastogne-Liège), and there is a palpable buzz of anticipation.

As we near our hotel, a bronze statue greets us from the centre of a small roundabout. With one hand on the drops, head raised to view us from beneath the peak of his cap, here crouches Gerrie Knetemann. A monument to the double winner of Amstel Gold, the effigy outstretches his left arm as if in welcome. The Netherlands' ◀





Although the roads
are open, the route
is typified by quiet,
traffic-free lanes with
amazing road surfaces

► Napoleon Dynamite (Google those 1970s aviator specs) won here in 1974 and 1985. In 1978 he became World Road Race Champion, won Paris-Nice and bagged three stage wins in the Tour de France. A true Dutch great, long-since retired, Knetemann passed away 11 years ago from a heart attack while riding his bike, aged just 53. Although a native of the north, it's fitting that this monument occupies such a public space in the heartland of Dutch cycling.

The lie of the land

So Holland is flat, right? The evening before the sportive (which takes place a day ahead of the pro event), I wander up to the bustling expo where numbers and timing chips are dished out. On my way out of the Amstel Gold Experience bar, I notice a stunning 3D topographical map of the region mounted on the wall, with the route of the pro race (the final 150km of which we'll ride tomorrow) marked on it. The depressions and wrinkles of the local landscape look like Gordon Ramsay's forehead. Crazy descents, impossibly steep ascents, barely a scrap of land on the level. The route profile I study from my signing-on pack confirms my worst fears – abandon all preconceptions of riding in Holland; this is not the flatlands.

Speaking to our hotel's barman later that evening, he confirms that the region of Limburg is nothing like the reclaimed land of the north. 'There are many hills here – it's very close to Belgium,' he says. It's clear that I'm not in for an easy ride, so I decide the best plan is to sink my nightcap and slope off to bed early so I can be ready to go when the alarm goes off at 5.30am.

I sleep through the alarm. Waking to the sound of freewheels, I hurry over to the hotel room window and see streams of riders coasting down the hill towards the centre of town.

The ride has a number of starting windows, and those riders up for the full 250km route have the option of a very chilly, early start to their days. The 150km route I'm riding, in the words of Sports Tours International's Roy Pearson, 'cuts out the boring 100km and goes straight to the interesting stuff'. He means the hills.

The temperature is firmly stuck in single figures as I start my easy spin to the start line. Armwarmers pulled right up to my armpits for optimum warmth, kneewarmers hoiked to the groin, I'm glad of the extra layers. Valkenburg is yet to awaken fully, and I negotiate the town centre with only minimal navigational mishap. The only people on the road, give or take a few delivery vans, are cyclists, and when I join the funnel of riders awaiting their turn to roll over the starting mat, I'm struck by the enormity of the entry here. Estimates vary between 13,000 and 16,000 riders. It's one hell of a crowd of us out on the quiet roads of Limburg today.

**Before you know
it you're deposited
onto another ridge,
high above the
Belgian border**



The details

*It takes a different form
of Dutch courage*



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The sheer size of this pack decides my strategy for the day. I resolve to follow as many wheels as I can, and hope to spring a few surprises later in the day as a reward to myself for vigilant pacing. There are many hills to climb, with the later 'bergs' – and in particular the phenomenal Keutenberg – going well into double-figure gradients. With this in mind I will begin with caution.

I start off feeling confident but, just 2km in, after crossing the river Geul and heading around the north of suburban Valkenburg, my fingers are becoming uncomfortably cold. The chill breeze comes at me from all angles as the route wends its way out of town and towards Maastricht. So circuitous is the 150km ride, in fact, that we're never more than 35km from the start. Everyone around me clearly has a belly full of breakfast, as the pace of our group hovers around 13kmh for the first 20 minutes. It's fruitless trying to go harder at this early stage as the volume of riders makes it tricky to negotiate an overtake safely. I sit in and enjoy the scenery.

After 6km I'm introduced to the first berg of the day – short, not particularly sharp, but still a 9% incline. The small town of Berg (named, it appears, after its defining feature) is treated to ►



The rider's ride

BMC Teammachine SLR01, £4,750, evanscycles.com

Always one for taking a gun to a knife fight, I rode the same bike as Philippe Gilbert at Amstel Gold – BMC's SLR01. Given the amount of climbing involved, I was glad of it.

Having such a lightweight bike (6.73kg without pedals) with a proven WorldTour track record was a huge benefit, even if my saddlebag almost doubled its weight on the day. The SLR01's mechanical Dura-Ace was click-perfect for the duration, and a 52/36 semi-compact chainset with 11-28 cassette was easily enough to take the Keutenberg at as close to a sprint as possible, and to big-ring the Cauberg.

As sure on the drops descending as it felt on the hoods ascending, the BMC was a joy to ride on such well-surfaced roads. Plus, crosswinds didn't unduly affect its DT Swiss R20 rims. It was stiff, agile and, above all, quick. Close to the perfect ride for the event.



It's fruitless trying to go harder at this early stage as the volume of riders makes it tricky to negotiate an overtake safely. I sit in and enjoy the scenery



Gradients of 20% and more mean you have to pick your route carefully through the many walkers



► the sound of hundreds of riders' front mechs shifting from big chainring to small with a clunk. Already, the first of the day's big-ring heroes stomps past us on his way to the summit. I'm still struggling to feel all of my fingers.

At 10km the road rises into a 15km section of rolling lanes that warms the legs and, given the cool morning, chills the lungs. By now we're out into the quiet countryside that lines the roads between Bemelen, Cadier en Keer and Honthem. Once on the Bemelberg, heading out of the town of Bemelen itself, I start to wonder if all the roads are as smoothly surfaced as these (it later turns out they are). Occasionally we swap roads for bike paths, where we have to ride single-file on the steep descent towards the outskirts of Gronsveld, before heading due south towards ever more Belgian geography.

At exactly 50km, I hear the nerve-jangling sound of squealing brakes up ahead. We've been descending for a good 3km and there's an obvious hold-up in the road. I initially worry there may have been a pile-up, but I'm relieved to discover that we have merely arrived at the

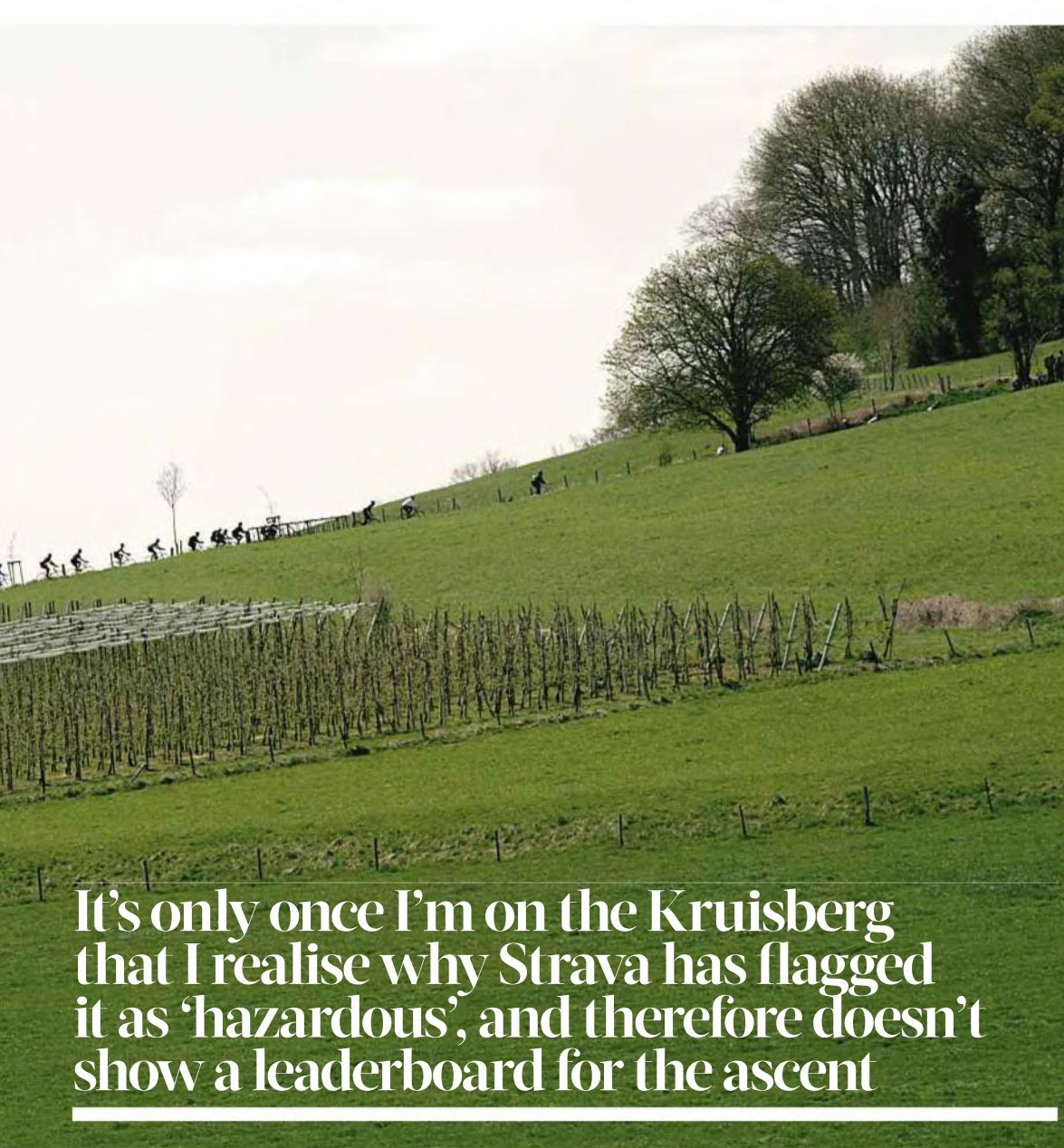
first of two feed stops and the marshals are making everyone stop and dismount before walking bikes into a large field. I come to a halt at the entrance, check my Garmin, stretch out my quads and calves and decide to plug on. I'm wary of altering my fuelling strategy on a whim, so simply whip another gel from my jersey pocket, neck it and take a swig from my bottle. After all, the sun's out, my hands are now warm and I'm really getting a taste for these hills.

The silver lining

Just a few kilometres up the road, as I skirt the western bank of the River Gulp (no, really), the road ramps up once more, only this climb is a bit different. Gone are the straight-up leg-friers of the last 50km – here the tarmac twists and turns up through the tree line as the 7km of gradual ascent towards the Loorberg warns of longer, more Alpine ascents to come.

The saving grace of this climb (beyond the fact that, unlike thousands of other riders, I'm not doing it on a full stomach) is that I encounter the first spectators of the day. A full day before





It's only once I'm on the Kruisberg that I realise why Strava has flagged it as 'hazardous', and therefore doesn't show a leaderboard for the ascent



the pro race takes place, pensionable locals are out in force, perched on roadside barriers and cheering us ever skyward. I'm easily caught up in the moment, and for a good 10 seconds I leave the saddle and push harder in a big gear, buoyed by the encouragement of the Dutch Darby and Joan Club. But minutes later, a quick comfort break and a phone call to Rich the photographer yields some worrying information.

'Where are you?' he asks. 'We're standing just after the end of that massive 4km climb.'

'Er, massive climb? Where was that on the route profile?' I offer helplessly. 'But thanks for the warning.'

He's right. It's brutal. As a string of riders stretches out into the distance, I shake my head sagely as more big-ringers come blasting past. Having been forewarned, I sit and spin a relatively easy gear for the duration, and as a result soon catch and pass a number of competitors who'd underestimated this climb. Even beyond the summit, a short descent quickly transforms into another set of rising switchbacks on the Drielandenpunkt (literally ◊

How the pros did it

What happened at the 2015 Amstel Gold Race

2015 was the 50th anniversary of the Netherlands' Classic, and it didn't go according to the script.

BMC's Philippe Gilbert was unable to add to the three previous victories he'd chalked up at the event, twice where he had powered to glory at the finish on the Cauberg, and once in 2014 after the course had been extended to finish 1.8km after the summit. This year he was out-sprinted by World Road Race Champion Michał Kwiatkowski of Etixx-Quick-Step to score his maiden win in the rainbow jersey.

Gilbert, who finished 10th, is the only Belgian this century to have won Amstel Gold, while its roster of winners in the early years is a list that includes greats such as Maertens, Merckx and Planckaert. The Netherlands had a stranglehold on the event between the years of 1977 and 1991, with only three non-Dutch riders winning between the Queen's Silver Jubilee and the release of Nirvana's *Nevermind* (if that helps put it in perspective).

The 2015 edition of Amstel Gold featured 34 climbs – the bergs that are typical of the geography of the Netherlands-Belgium border. These punchy ascents top out with the chain-worrying Keutenberg and include four separate passes of the atmospheric Cauberg in the centre of Valkenburg. Punctuating the 250km course, they make Amstel Gold a war of attrition.

Above: Towards the end of the course, climbs get a lot more exposed

Left: The left turn at the foot of the Cauberg

► 'the point of three lands' – where Belgium, the Netherlands and Germany meet) for a further 6km, to the highest point in the Netherlands.

Releasing my inner Gilbert

I stop at the final feed station, eagerly consume two sugar-coated waffles, a whole banana and a (by now) very warm gel from my pocket. 100km down, just 50 to go. It's at this point my strategy, for want of a better word, comes into its own. I secretly love climbing – it's just the unknown route that prevents me from going at every hill full-bore. But from here I know the way home. I've seen the pros make the run into Valkenburg so many times on TV that the names of hills such as the Kruisberg, Froberg, Keutenberg and Cauberg feel like local climbs to me.

It's only once I'm on the Kruisberg that I realise why Strava has flagged it as 'hazardous', and therefore doesn't show a leaderboard for the ascent. Riders around me are crushed by it, dismounting. One missed gear from the guy in front and I'll have nowhere to go. 36/28 engaged, I get low on the tops, engage my core and push hard for the top.

A rapid 20km later and I'm starting to sense the finale. A sharp right takes me on to the Froberg, which ramps straight up before a left-hander deposits us on to the ridgeline. Our bedraggled pace-line of riders is then propelled downwards to Schin op Geul, where we take a sharp left. It's then that I see it.



Nothing prepares me for the foot of the Cauberg. The start of the final climb is packed with crowds, cheering every one of us onwards and upwards

To my right, through the trees, I spy what looks like a ski-lift. Specks of colour ascend straight up a near-sheer cliff face, and I realise the specks are riders on the Keutenberg. My inner Philippe Gilbert knows it's no more than 10km to the finish. It's time to attack.

The road narrows, trees close in, grass verges steepen. Trepidation turns to elation as I round a turn to see the road (which maxes out at a 22% gradient and has been the decisive penultimate climb for many editions of the Amstel Gold Race) is lined two or three-deep in places with cheering spectators. Staying in the lowest gear I have, there's plenty left in my legs as I get out of the saddle for a big dig. Shouting 'on your left!' has little meaning for the predominantly Dutch and German-speaking peloton, but they hear my cry and work it out for themselves. My efforts are greeted with applause and shouts of encouragement from the spectators, which spurs me to push even harder. This is intense.





The statue of Gerrie Knetemann in the centre of Valkenburg is a reminder of the Amstel Gold's heritage

Do it yourself

GETTING THERE

Valkenburg is about a three-hour car drive east of Calais, via the E40 and E17 through Belgium. Alternatively, a Eurostar train to Brussels will bring you within 130km, and a €100 (£73) taxi ride, from the Dutch town.

We flew to Brussels with Brussels Airlines from Heathrow. A return 35-minute flight (with following wind) cost £146, and our bike travelled as part of our 23kg hold allowance (a refreshing change to the discount airline approach of 'charge extra for everything').

Transfers from Brussels airport, as well as entry to the event itself and accommodation, were supplied by Sports Tours International, whose three-day tour package costs £359. More info at sportstoursinternational.co.uk.

WHERE TO STAY

The charming and welcoming Huis Ter Geul hotel (huistergeul.nl) in Valkenburg was our base. Barman Sten educated us in the ways of Dutch ale, while an early breakfast on Saturday was laid on especially for sportive

riders. Bed and breakfast costs from €32.50 (£23) per person per night, and there's a secure garage in which to store your bike.

WHERE TO EAT

Valkenburg has an abundance of eateries (and a real paucity of shopping outlets, so stock up on essentials ahead of your trip). We favoured Charlie's Burgers and Steaks (charliesvalkenburg.nl) for post-sportive protein intake, but every taste is catered for in the town centre's streets – even chicken and chips.



Hitting the top, a lone Dutch rider who's up for the chase passes me, and I latch on to his wheel. On the drops, pumping the pedals as the wind turns in our favour, we hurtle down towards the finish.

Nothing prepares me for the foot of the Cauberg. The sharp left-hander at the start of the final climb is packed with crowds, cheering every one of us onwards and upwards. I've seen this on the telly. I'm still in the big ring from the descent into Valkenburg, and I stay there for the duration of this final ascent. Out of the saddle, on the drops, digging in for every final metre, grimacing and hammering it up for the entertainment of the local crowds.

In with a shout

The following day, all that raucous support on the final climb doesn't do Philippe Gilbert any good. Despite having won this race three times in the past five years, BMC's Belgian star finds himself bettered by rivals on the climb he's made his own. But as I stand at the roadside and shout myself hoarse, I am once again caught in the moment, finally understanding the war of attrition and test of pacing that Amstel Gold represents. For them and for us. *

Marc Abbott is a freelance journalist who has since set free his inner Philippe Gilbert

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STUDIO PHOTOGRAPHY DANNY BIRD RIDER PHOTOS HENRY CARTER, MICHAEL BLANN, MIKE MASSARO, DEBORAH MALIN

Some riders dream of the indulgence of an entirely bespoke build, others take pleasure from picking out a brand that won't be seen around every street corner. A good number just want the assurance that comes with knowing their bike is being ridden by the pros in the big races. Whichever camp you fall into there's something for all tastes in this issue.



Moots Vamoots RSL



Colourbolt



Focus Izalco Disc



Specialized Amira

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Moots Vamoots RSL

With its latest titanium bike, Moots is out to prove that carbon is not the only way to go quickly



Words PETER STUART



THE SPEC

Model	Moots Vamoots RSL
Groupset	Campagnolo Chorus EPS
Deviations	None
Wheels	Campagnolo Bora Ultra 35 Clincher
Finishing kit	3T Ergosum LTD handlebars, Moots RSL stem, Moots Cinch seatpost, Fabric Scoop saddle
Weight	7.45kg
Price	£3,995 frameset, approx £8,500 as tested
Contact	moots.com

There's no mistaking a true American bike brand. Moots, like many US framebuilders, set up shop in the Rocky Mountains to build all-American bikes with all-American materials to be ridden on the gravel, tarmac and dirt roads that the Rockies have in abundance. And while the brand is tied to titanium, Moots is determined to prove the material can be every bit as racy as the best of carbon fibre.

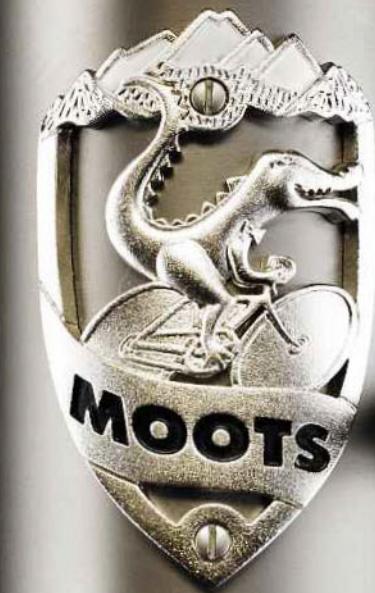
The Moots story began with steel in 1981, in sunny Steamboat Springs. A decade later the brand launched its first titanium bike, and it now works exclusively with the material. During its steel phase, Moots developed some innovative designs – one of which was the YBB system. YBB, meaning Why Be Beat, was a suspension system mounted on the junction between seat tube and seatstays that has been copied multiple times, most recently by Pinarello with its K8-S cobbles bike (see issue 37).

The Moots story could extend over many pages, but it culminates in the company's current position

as a top-tier titanium framebuilder. And while the Vamoots' pricetag may seem high, the bike has been on a journey to justify it.

'With the RSL we start with a straight-gauge US-made tubeset, which has a uniform wall thickness throughout the whole tube,' says Jon Cariveau of Moots. 'We then box it up and ship it to Reynolds in the UK, and they go in and internally butt it to our specification. They'll thin it out in the centre and leave it a bit thicker on the end, so we lose some weight and maintain the same stiffness.' The tubes are returned to Colorado, where Moots implements its expertise in mitring and TIG-welding to create the smooth joins visible on the bike. Each bike is made to order, and although there are stock geometries, Moots also gives the option of a completely custom build.

Some metal aficionados may argue that straight-gauge titanium tubing is stiffer than its butted alternative, while carbon fans might say that titanium will never be as stiff or light as the black stuff. Seeing as Moots



HEAD TUBE

The latest generation of the Vamoots RSL uses a 44mm head tube instead of the skinnier 1 1/8 inch (28.6mm) used on the old model. This makes for a stiffer front end and more predictable braking and handling.

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From the outset, the Vamoots RSL was a thoroughly pleasant ride. At low speeds on rough surfaces it seemed to glide

has been busy refining the art of titanium building for 25 years, we were intrigued to see how that experience has been put into practice out on the road.

First shimmer

Having made the journey from the US to the UK, back to the US, and then trans-Atlantic once again to the *Cyclist* office, the Vamoots had been on a long journey already, and we were duly excited to unpack it. Titanium frames can be an acquired taste, but a close look at this one should be enough to convert most sceptics. The welds are stunningly neat, a consequence of Moots' meticulous TIG-welding, and the smooth, naked titanium finish is complemented by the understated Moots branding. It was a frame that attracted an abundance of respectful nods while I rode it. I only wish we had opted for the titanium headset spacers to complete the handsome finish. While titanium bikes can attain the status of cycling jewellery, the Vamoots RSL proves capable of a great deal more.

From the outset, the Vamoots RSL was a thoroughly pleasant ride. At low speeds on rough surfaces it seemed to glide. Carbon, despite all its merits, often fails to offer that pleasing resonance with the road at low speeds. My concern was that this ride quality at a gentle pace would

BRAKES

Following our review of Campagnolo's Bora Ultra clincher wheels in issue 37, the Vamoots RSL gave us a chance to further test the brakes, which showed no sign of deformation and cooled very quickly after heavy braking.



render the frame too soft to really ignite at high speed, something I've experienced with titanium frames before. Moots went to some effort in design to avoid just this.

'We made this a bike of two halves. You can draw a line from the middle of the head tube to the middle of the seatstays, and from that line down we want this bike to be extremely stiff and responsive, and from that point upwards we still want it compliant,' says Cariveau. Moots pursued that goal with the butting of the tubes, but also by tapering the chainstays from the bottom bracket to the dropout. That's aided by an extremely skinny seatstay construction, which paradoxically uses stiffer '6-4' titanium but which can be built with thinner walls and a narrower section to offer more structural flex.

Those design principles have paid dividends, and my impression of the Vamoots simply got better over time. At first the frame's stiffness wasn't overly obvious – it didn't create otherworldly comfort over rough ground, nor did



**SEATPOST**

Moots has equipped the Vamoots RSL with its own 30.9mm RSL seatpost. Despite a trend towards skinnier and more flexible seatposts, Moots believes the gain in stiffness during seated efforts eclipses the penalties in weight and harshness.

losses seemed to evaporate, even to a degree obsessive like me, when it came to the overall harmony of the bike.

With the benefit of Campagnolo's light and smooth Bora clincher wheelset, the Vamoots RSL was willing and able on all manner of rides. I found myself constantly tagging an extra 10km loop onto my regular routes, searching out extra climbs and descents. This was largely thanks to the frame's ability to smooth out Surrey's cracked tarmac, although it must be noted that the frame dealt much better with the gentle imperfections than potholes, where some carbon frames I've ridden were able to absorb more of the impact.

It's my longstanding belief that comfort and stability can contribute to overall speed. On the Vamoots RSL the smooth and predictable ride quality allowed my upper body to remain as relaxed as possible. Putting

I found myself constantly tagging an extra 10km loop onto my regular routes

it to the test on some of my favoured local routes, it was consistently as quick as I've gone on the stiffest carbon frames, very much because its pristine ride quality urged me to push harder.

I'm hard pushed to pick any fault with the Vamoots RSL, save for the fact that it doesn't do any one thing exceptionally. There are faster bikes, more comfortable bikes, and sharper-handling bikes, but very few that offer all at once in combination with stunning aesthetics and ride quality. And while the pricetag is considerable, in contrast to the more fragile nature of carbon, this really is a frame for life. Purchasing a Vamoots RSL could be compared with a matrimonial commitment, where the only reservation is that unnerving prospect that it could well be the last bike you ever ride. ♦

It feels the stiffer under pressure. Yet every ride on the bike revealed a perfect balance in the frame. That gentle resonance with the road was combined with decisive handling and an ability to dampen heavy impacts, yet it still delivered on all of my hardest inputs, sacrificing only a tiny amount to flex.

Testing metal

After a few casual rides, I decided to put the bike to a serious test - a nine-person road bike TT at Silverstone. After punching around the course at 44kmh for 11 miles, and consistently being able to change pace when I needed to, I was ever grateful to the Vamoots RSL. It never faltered, and was as capable as any racer I've ridden.

Of course it does lack some of the attributes of a race bike. It promises no aero advantage, and while the bottom bracket area is surprisingly stiff, it does lose out a little to the sturdiest carbon frames on the market. It carries some extra weight too, with the frame coming in at 1.2kg - again, very light for titanium but half a kilo heavier than the lightest carbon. But those marginal

The detail

Having spent some time away from Campagnolo's EPS electronic shifting, I found this Chorus system to be better than I remember. With the same carbon four-arm crankset design as the Super Record groupset, save for a few titanium bolts, and a similarly sculpted rear derailleur (in alloy rather than carbon) the Chorus groupset doesn't look too different from Campy's extremely expensive flagship group. The same goes for the performance. Every click on the levers creates a positive and sharp shift at the back, with an action, speed and feel that I prefer to Shimano's Di2. It may not have all the sterile accuracy of the Japanese kit, but it offers a snappy and effective electronic system tied to Campagnolo's handsome heritage for a similar retail price to Shimano's Ultegra-level Di2. It complemented the Vamoots RSL perfectly.

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Colourbolt Maximum Black

Colourbolt may not be a brand that shouts loudly, but it could prove to be a big noise



Words STU BOWERS



THE SPEC	
Model	Colourbolt Maximum Black
Groupset	Sram Red22 HRD
Deviations	None
Wheels	Enve SES 3.4 Disc
Finishing kit	Thomson Road carbon handlebars, Thomson Elite X2 stem, Thomson Masterpiece seatpost, Fizik Arione saddle
Weight	7.9kg
Price	£6,995 as tested; £2,000 frame and fork
Contact	mosquito-bikes.co.uk

Oh, that's nice. What is it?' This was a phrase I got used to hearing while aboard the Colourbolt Maximum Black, and for me it added to the bike's appeal. I'm always drawn to products that can wear anonymity as a badge of honour. Only once you know where to look will you be able to spot the subtle hallmark of the brand. The clue is in the name. A single coloured chainring bolt is all that gives away the bike's true identity. Within that too is a further hidden meaning. A red bolt denotes the bike combines carbon and steel (the fork is an Enve carbon), while a copper coloured bolt is indicative of an entirely steel build. Quirky, but satisfying.

I'll admit to being pretty-well over the whole matt black trend, as for the last 18 months the *Cyclist* office has been awash with precious little else, but Colourbolt's so-called 'Drenched Black' finish is something different. From a distance it may look humdrum, but get up close and it has a roughened, almost scaly texture. Company

founder Jay Pond-Jones tells me the reason behind the unusual finish is to give the TIG-welded tubeset a more seamless aesthetic, as the surface texture blends with the welds, disguising them, almost like a fillet braze. As a rather useful aside, the roughened finish is also tough and durable.

A collaborative approach

Pond-Jones makes no claims to be a bike genius himself. Coming from a background in TV and advertising, his passion for bikes was born out of racing his colleagues across London's deserted streets in the small hours after working on Los Angeles time. You can't go and watch him brandishing a welding torch, like you could with the likes of Tom Donhou, but instead Pond-Jones's approach is to seek out the appropriate expertise for each part of the process, making each bike a collaboration.

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CABLE STOPS

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► Mosquito Bikes. From here the frame drawings are passed into the hands of one of two expert framebuilders, chosen for their specialisation in steel. In the case of our Maximum Black bike, the TIG-welded Columbus Max tubeset, selected specifically for its high stiffness-to-weight ratio, was the handiwork of BTR Fabrications, based in Somerset.

It's an undeniably elegant creation. One of the standout design points for me is the way the seatstays butt together at their junction with the rear of the seat tube. Another nice touch is the way the hydraulic cable routing has been well considered. Despite being entirely external, it remains almost invisible.

The seatstays appear as if they're not designed to offer flex for rider comfort – they are ovalised vertically, not as you might expect, horizontally – yet the sensation out on the road is really rather agreeable. The rear end of the Maximum Black deals admirably with road



It doesn't take off like a startled gazelle – it's more of a kicked goat – but it accelerates fast enough



TUBE JUNCTIONS
The 'Drenched Black' finish with its highly textured surface almost makes the TIG-welds disappear, giving each tube junction an organic, seamless appearance.



shocks, the bumps dissipated with a nicely damped 'thud', rather than a reverberating 'ping' that would, over time, be tiring and annoying.

One of my early test rides lasted for nearly 220km, and after more than seven hours pedalling the Colourbolt from deepest Dorset into London, I climbed off feeling unscathed by anything the bike had dished out, and that's despite the chunky 31.6mm aluminium Thomson seatpost. It's testament to the quality of the frame that even the Enve carbon fork – a top choice in its own right – was made to feel a little on the harsh side by comparison to the rest of the bike, because I was certainly aware of more vibration through my hands than I was anywhere else. ►

**BRAND IDENTITY**

With no logos or graphics to be seen, a single coloured chainring bolt is all that gives away the bike's true identity.



► The Smart Enve System wheelset, with its 45mm rim profile at the rear and 35mm up front proved a perfect partner to the build. The wheels are light and responsive and add a bit of zest to the ride feel. The supple Veloflex Corsa 25mm tyres bolstered the overall comfort.

Slim and fast

With all that said, you might be anticipating a big ‘but’ around now. Not so. The comfort the Maximum Black delivers is not at the expense of performance. You’re reminded that this is a steel frame with full hydraulic discs when you consider its near-8kg overall weight, but I was considerably less aware of that figure than I expected. It doesn’t take off like a startled gazelle – it’s more of a kicked goat – but it accelerates fast enough. There’s also a lively feel once you’re up to speed that defies its heft, and even on a 20% gradient that extra bag and a half of sugar’s worth of extra weight compared to an equivalent priced carbon bike seems to pale into insignificance.

Descending is also a pleasure aboard the Maximum Black. Hunkered down in the drops in a tight crouch I regularly descended at speeds I would usually be nervous to maintain for anything longer than just a few seconds. Combined with the added confidence of the Sram Red hydraulic disc brakes at my fingertips, I achieved one of my highest-ever top speeds on a favourite descent.

It’s an impossible dream for steel to compete with carbon in the weight stakes, but this handcrafted bike has got what it takes to overcome that. It’s the kind of bike that rewards its owner with the pride that comes from a bespoke build but, more importantly, possesses a ride quality that you’ll almost certainly fall in love with. ♦

I regularly descended at speeds I would usually be nervous to maintain for anything longer than just a few seconds

The detail

This Maximum Black test bike was equipped with Sram Red hydraulic disc brakes, using the smaller 140mm rotor size front and rear. The industry has still not settled on a consensus for disc rotor size. Some prefer the ‘safe bet’ of a larger 160mm rotor in the name of superior braking force and heat dissipation, but others are happy to offer 140mm as the neater-looking, more road-bike-esque option. The Sram Red set-up with 140mm is easy on the eye (the cleanest looking by far of any of the disc set-ups in my opinion) and does not detract from the beauty of this bike at all. I couldn’t fault the braking performance. The 140mm rotors delivered ample power, progressively and predictably, with great lever feel, plus there was almost no irritating brake rub. Overall, a very positive attribute of the build.



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Focus Izalco Max Disc

Focus lays claim to the lightest production disc-brake road bike



Words JORDAN GIBBONS



THE SPEC

Model
Focus Izalco Max Disc

Groupset
Sram Red HRD

Deviations
None

Wheels
Zipp 202 Disc

Finishing kit
Zipp Service Course

SL-70 bars, Zipp Service Course SL stem, Focus CPX seatpost, Fizik Antares saddle

Weight
6.81kg

Price
£5,999 (UK pricing not yet announced)

Contact
derby-cycle.com

If scientists at Brunel University are to be believed, beauty is nothing more than symmetry. Their theory of classical human beauty is that good-looking people have a left side of the face that is a mirror image of the right side. By this premise, bicycles are inherently ugly because they are asymmetric. The drivetrain runs down the right and, with the advent of discs, the braking system runs down the left. If the bike is to handle riding forces properly, certain tubes such as the chainstays need to be thicker on one side than the other. The modern bike is so irregular that it's a wonder other vehicles don't point and laugh at it in the playground.

Focus, however, is not willing to accept an ugly bike. It wanted to design a bike that was beautiful in the eyes of aesthetes as well as engineers, and it decided that each side of its frame should look identical from the outside. The only way to do this was to make it asymmetric on the *inside*, and so with the new Izalco Max, beauty quite literally only runs skin deep.

World beater

Focus currently sponsors pro team Ag2r La Mondial, and in September the team will be free to trial disc brakes in competition. Assuming all goes well, the UCI will then allow further testing in 2016 with a view to introducing them fully to the WorldTour in 2017. With this in mind, Focus took the existing Ag2r race bike and gave it an internal, disc-specific makeover.

The fork is the most obvious place where this has taken place. The fork on the original Izalco Max was very skinny and lightweight, but it didn't have the strength to support disc brakes. The new fork is visually very similar but the wall thicknesses have been increased significantly on the left leg while keeping the same external diameter. René Birkenfeld, carbon lay-up engineer at Focus for the Izalco Max Disc, was also very keen to have thru-axles. A bolt-through axle allows one continuous band of carbon fibres to run down the front of the fork and up the back, without being interrupted by the dropout. ▶



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SEATSTAYS

Removing the redundant seatstay bridge allowed Focus to drop weight, improve compliance and increase tyre clearance to 28mm.



I was pedalling along, completely sodden in my summer kit, but somehow I couldn't help smiling

► This greatly increases the strength without much additional weight, so the disc fork only weighs 320g (just 27g more than the non-disc version). Birkenfeld says, 'We did extensive research with our partners in Taiwan. By designing, simulating then testing different resins, fibres, lay-ups and wall thicknesses we think we've achieved a stiffness to comfort ratio that is way ahead of the calliper fork.'

The frame too has added very little weight during its disc makeover – 40g to bump it up to 790g. The whole bike is only 6.81kg so Focus is claiming it to be the lightest production disc bike available. Despite the minimal additional weight, Focus has actually made quite a few changes to the frame. The top tube, for instance, is larger to increase stiffness and the chainstays have been elongated to 415mm for a couple of reasons.

Focus opted for a 142mm thru-axle rear end, so the chainstays needed to be lengthened to prevent chain rub caused by pushing the cassette out further from the centre line of the bike. The manufacturer also says that the longer chainstays have the added benefit of increasing stability at high speed.

Put to the test

At the launch in Italy, I took the bike down a few long, fast descents and things certainly remained calm and composed while carving through the corners. Once the road turned back uphill it was clear that Izalco Max hadn't lost any of its race pedigree in the disc makeover. The new rear triangle was still plenty stiff enough to ensure acceleration remained lightning quick, and the low overall weight was a bonus when the gradients pushed above 10%. ◁



For me, however, the big surprise was the comfort levels on a supposedly beefed-up race bike. The worst of the road buzz is dampened to create a smooth ride, and Focus puts this effect down to the added flex from its CPX seatpost. While the post is a unique design, when I swapped it for my usual seatpost I couldn't discern any noticeable decrease in vibration absorption. I suspect then, that the seatpost is only partly responsible for the comfortable ride, and as there is no inline option available with the CPX post, I wouldn't give a second thought to swapping it out if correct fit requires it.

My latest ride on the bike was in some of the grimmest weather I've experienced for a long time. By the halfway point the temperature had dropped 11° and it was pouring with rain. I was pedalling along, completely sodden in my summer kit, but somehow I couldn't help smiling.



I generally despise cycling in inclement conditions, but the one thing that kept me from searching for the nearest train station was the pleasure of tearing down the wet and gritty descents. The peril of descending in the wet with carbon wheels is well documented, but armed with Sram Red hydraulic disc brakes I found myself in complete control, which made the riding fun and fearless.

Actually the whole groupset was flawless. I've never been a huge fan of Sram Red previously as I've always thought the shift quality was lacking compared to the other top-tier groupsets, but it performed admirably in some of the worst possible conditions. As everything got a bit quick towards the end of the ride the fast gear changes were a small mercy during leg-burning surges.

Until recently disc brakes have been the sign of an endurance bike designed for long miles in relative comfort. Now Focus brings us disc brakes on a proper race bike that still delivers in the comfort stakes as well. I'm totally sold, and getting back on my regular-calliper bike felt like a backwards step. But the real test comes next year when the pros make their choice. *



CABLE ROUTING
Focus has chosen external gear cable routing on the Izalco Max Disc at the request of the Ag2r mechanics.

I'm totally sold, and getting back on my regular-calliper bike felt like a backwards step

The detail



Shimano has become such a force in cycling that it's easier to follow the Japanese giant than go against it. Rather than risk some form of VHS versus Betamax war, Sram has produced a full range of callipers to go with Shimano's new Flat Mount fitting. Flat Mount callipers bolt to the frame through the chainstays, so the whole package is much neater and, in theory, more aerodynamic than other systems such as Post Mount or IS Mount.

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Specialized S-Works Amira SL4

With a £6.5k pricetag, the S-Works Amira is a rare example of a true top-end bike for women



Words SUSANNAH OSBORNE



THE SPEC

Model	Specialized S-Works Amira SL4
Groupset	Shimano Dura-Ace 9000
Deviations	S-Works FACT carbon crankset
Wheels	Roval Rapide CLX 40
Finishing kit	Specialized Women's SL Carbon bars, S-Works SL alloy stem, Specialized Body Geometry Oura Pro saddle
Weight	6.47kg
Price	£6,500
Contact	specialized.com

There's no better advertisement for a bike than being ridden to victory by a pro after a long solo breakaway. Lizzie Armitstead did just that when she broke clear on the ascent of the cobbles of Michaelgate in Lincoln to win the National Road Race title last month. The bike was a Specialized S-Works Amira SL4, which makes it kind of a big deal.

Specialized's commitment to women's cycling is among the best in the business, matched perhaps by only Trek and Giant. The company caters for every sector of the women's market but this bike is Queen Bee – an overachieving, hard-grafting A-lister with a £6,500 pricetag that draws attention wherever it goes. And it's a bike with very specific riders in mind.

Winning women

The S-Works Amira SL4 is a pure racing bike, designed for women who ride fast, be they national champions, professional rouleurs or ambitious amateurs. But as

one of the most expensive off-the-peg women-specific bikes on the market, is this six-and-a-half-grand steed really what women want, bearing in mind that for many manufacturers the price ceiling on their women-specific ranges is between £2,000 and £3,000.

'There's been a definite increase in sales of women-specific bikes at the higher end of the market, starting with a shift towards carbon models,' says Olivia Bleitz, women's business manager at Specialized UK. 'This is backed up by an independent survey of 1,500 female cyclists by Sport Marketing Surveys, which found that 10% of women said they would be spending more than £3,000 on their next bike,' she adds. The S-Works Amira SL4 is more than double that price, so what makes it so special?

The Amira range was launched in 2010 as a race-ready alternative to the endurance-focused Ruby. Over the past six years the design has been pulled, pinched and tweaked to create one of the lightest, stiffest bikes designed specifically for women – with geometry that's



amira

HEAD TUBE

Every brand loves a bit of marketing spin, and as such Specialized refers to its curvaceous head tube as being 'cobra shaped' and integral to the Amira's front end stiffness

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GROUPSET
Women's bikes with
Dura-Ace spec as standard
are in the minority, but
the Amira SL4 relishes
this level of kit and
does it full justice

If you're not used to riding with your nose just above your stem, this bike might come as a shock



sympathetic to the female form, but still with a hard-line slant. Some might say that the S-Works Amira is the opposite of a typical women-specific bike. It's aggressive, lightweight and quick to respond on the road. It's the infuriating girl at school who is both top of the class and captain of the sports teams.

The flared top tube joins a bulbous head tube (which Specialized refers to as having a 'cobra shape') that is laid up in such a way as to make it as stiff as possible. The stem practically insists on being slammed to maintain that aggressive riding position.

But creating a stiff, responsive bike for a woman isn't as simple as sizing down a unisex frame. 'The whole frame is designed around a lighter, female rider,' says Bleitz. 'We use a different carbon layup that has greater deflection and is suited to a lighter load.' While the Amira frame is super stiff, it isn't as rigid as the Specialized Tarmac – the closest unisex equivalent – and this is because women aren't quite as heavy or as powerful as some frame-bending men.

It's also interesting to note that as the Amira frame sizes increase, so does the diameter of the tubes: a 56cm frame will have wider tubes than a 51cm bike because a larger, heavier rider will likely need a stiffer frame.

Up to race pace

This is a bike that delivers exactly as expected. I couldn't get enough of it. I found myself setting my alarm for 5.30am so I could get some serious riding in before the kids woke up. And where the Amira really stands out is the pace with which it accelerates – there's a reason that Lizzie and her teammates at Boels-Dolmans have had 15 wins on this bike already this season (by the way, there's no custom team frame, the pros ride stock framesets).

The fit is admittedly aggressive and if you're not used to riding with your back flat and your nose hovering just above your stem, this bike might come as a shock. But the short, stocky head tube allows you to get low and aero over the front end of the bike, which in turn lets you connect with and control the bike at speed – something that's generally lacking in the made-for-comfort



the women-specific market. As well as the chunky head tube, an oversized down tube, bottom bracket shell and chainstays add further stiffness where it's needed for pleasing power transfer and responsiveness.

The S-Works Amira is a blast, although the trouble with a bike like this is that riding becomes binary: you're either on or off. There's no middle ground, so a spin around my local circuit turned into an episode of *Wacky Races*. The more I rode, the faster I wanted to ride. Clocking my Garmin I'd done an hour solo at 34kmh. I ended up completely drained but very happy.

Closing the circle

As well as a superior frame, the S-Works Amira SL4 boasts a very good set of wheels, something that can rarely be said for an off-the-peg women's bike.

Five years ago Roval – Specialized's in-house wheel manufacturer – was largely considered to produce so-so wheels, but big investment and a new direction under the guidance of Specialized engineer Jeremy Thompson has seen the quiet evolution of the brand.

The S-Works Amira SL4 comes with Roval Rapide CLX 40 wheels, which retail for around £1,500 a pair and are hand built. With Specialized having its own wind-tunnel there should be little doubting the rims' aero credentials, and on the road they deliver. They're fast to pick up the pace, holding speed well, and also dealing well with crosswinds. The total weight of the wheels without tyres is 1,375g. By comparison a pair of Mavic Cosmic Carbone 40C wheels costs about the same and weighs 1,575g.

WHEELS

Specialized has its own wind-tunnel at its California base, plus its own wheel brand, Roval. Combining the two produces light, fast wheels that match the claims Specialized makes for them.

The detail



Specialized has been speccing its own S-Works chainsets on its high-end bikes for many years. Don't mistake this for a cost-cutting exercise, though. The super-light carbon cranks save a bit of weight over even the top-tier mainstream groupset choices, plus they are optimised to work with the pressfit bearings the Amira uses in its bottom bracket. The rings and crank arms don't fall short on stiffness and performance, plus the aesthetic touches perfectly match the rest of the bike.

A full Dura-Ace 9000 groupset is as good as it gets and delivers faultless gear shifts as you flick down the cassette – something you'll need if you're going to get the most out of the bike.

The finishing kit is all supplied by Specialized and includes the Oura Pro saddle, which claims to offer optimal power transfer but didn't suit me in terms of comfort. The Specialized Women's SL Carbon bars have a shallow drop for smaller hands but have as much chunk as a Yorkie, which I love, especially in a sprint, but again this comes down to personal preference.

It is, admittedly, hard to criticise this bike. One reason for this is that the S-Works Amira SL4 has so few competitors, making comparisons hard. I'd be nitpicking slightly to say I was disappointed there's no Shimano Di2 option, although the frame does have the ability to run electronic shifting. Admittedly this is probably not the bike for you if you're a fan of the 200km-a-day ride, but in a shorter, punchy road race or criterium, I'd choose it every time.

The monochrome, matt black paint job is understated and cool – if MI6 rode bikes, this would be their ride – and it makes a refreshing change from some of the pinkified women's bikes on the market. I met plenty of other riders, male and female, who couldn't believe that this is a women-specific bike, and that can only be a good thing. 





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Fulcrum Racing Zero Carbon Clincher

Fulcrum's top-tier Racing-series wheels get a carbon makeover

Words JAMES SPENDER

In a world where it won't be long before someone invents a way of reducing the drag coefficient of your earlobes, it's nice to see a company still ploughing a furrow in the super-light field – after all, before wind-tunnels, weight was what we were all concerned about, right? And if there's ever a place to save it besides yourself, it's on your wheels.

Lighter wheels can accelerate more quickly, which makes them ideal for climbing, where getting up that hill fast is all about a series of accelerations to overcome gravity. Plus, the less you and your bike weigh, the less effort you need to exert to keep things rolling. To that end, Fulcrum has taken its enduring Racing Zero wheel – previously aluminium-rimmed – and given it the full carbon treatment.

The Zero Carbons have dropped a claimed 82g over the alloy Zero (and 62g over the tweaked Racing Zero Nites) to come in at 1,358g a pair. Since the Zero Carbon build is identical to the alloy Zeros – same hubs, spokes and nipples – by my reckoning that means each rim is around 40g lighter than its alloy counterpart. While that might not sound like much, I always remember an F1 engineer once showing me a little widget that was stuck to the cars' rims to measure tyre pressure. He explained it weighed 32g, but had the 'rotating weight of nearly 100kg' at maximum speed. Which is ◉

THE DETAILS

Weight
Front 769g Rear 589g
(1,358g pair)

Rim depth
30mm

Rim width
24mm

Spoke count
16 front, 21 rear

Price
£1,600

Contact
i-ride.co.uk



► proof that every little counts, or where wheels are concerned, can count against.

At £1,600 the Zero Carbons cost more than £1 per gram, which for high-end wheels isn't unusual, but does raise expectations when comparing them to other lightweight wheels on the market – Mavic Ksyrium R-Sys SLRs are a claimed 1,295g and cost £1,450, for example. Of course the Ksyriums are alloy rims not carbon, but I still think there are grounds for comparison. Some people might be reading this review wanting a light set of carbon wheels, others just a light set of wheels full stop.

Shaped for speed

The obvious difference between carbon and alloy, and indeed the Zero Carbon and the alloy Zero wheels, is the appearance. The alloy Zeros are far squarer and have a metallic brake track (except for the all-over anodised Zero Nites). These Zero Carbons are noticeably rounded and, obviously, black.



In terms of rim cross-section, Fulcrum reckons the blunt-nosed profile boasts better aerodynamics than the alloy Zero, and while data on the subject was unavailable, a visual comparison to the profiles dominating deeper-section wheels would seem to back this up. So too my experience of them.

I've ridden the alloy Zeros on a number of occasions – specifically the Zero Nites – and the Zero Carbons carry their speed noticeably better and, as an aside, make a lovely wind-scything noise while doing so (braking induced a similarly endearing noise, and was, for the uncharacteristically dry miles I rode them, powerful and well modulated).

As expected, the Zero Carbons pick up speed extremely well. They accelerate sharply when the pedals are given a kick, which made for some enjoyable assaults on shorter, punchy climbs, while longer climbs were dealt a helping hand with the lower overall weight. However, it's the stiffness of the wheels that marks them out.

HUBS

Ceramic bearings come as standard on the Racing Zero Carbons, and make for very smooth rolling indeed – a trait that was maintained throughout the test, with no readjustment of the preload necessary. The driveside hub flange is massively oversized to increase stiffness, again to great effect.



They accelerate sharply. However, it's the stiffness of the wheels that marks them out

Although there's no tubeless compatibility here (unlike with previous generations of the Racing series), the Zero Carbon rim bed is fully sealed, meaning no rim tape is necessary. The upshot, however, must be a pain for the wheelbuilders at Fulcrum. Each of the oversized spoke nipples has to be inserted through the valve hole and guided into place with a magnet in a system Fulcrum calls 'MoMag'. Fulcrum claims this type of construction makes for a stronger, stiffer wheel, especially with the bladed aluminium spokes it employs, and my experience definitely agrees. These wheels are indeed stiff.

Feel the width

Like many manufacturers, Fulcrum has gone wider on the rim bed, thereby increasing tyre volume, which in theory should increase rider comfort, but unless you're running significantly lower pressures than usual you'd be hard pressed to tell.

As stiff as the Zero Carbons are, I did feel they had a tendency to perform harshly over rough roads. To check this out, I swapped out the wheels for a set I'd consider more compliant (retaining the 23c tyres) and the feel of the bike changed markedly. Things immediately felt a lot smoother, but the bike lost the verve and sprightliness I'd grown accustomed to. Upping the tyre size to 25c helped a lot, but it still demonstrated just how much of an influence wheels have on a bike, and it showed that the Zero Carbons thoroughly deserve the 'Racing' moniker.

You can't have it both ways, but if you're prepared to sacrifice comfort for something stiff, responsive and fast, the Racing Zero Carbons might be just the ticket. ■

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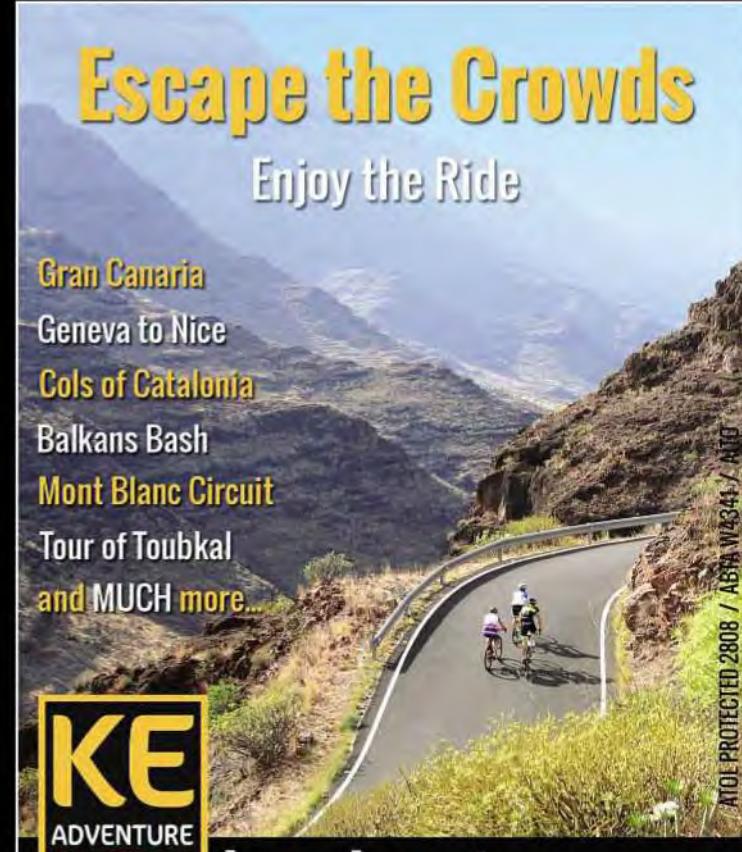


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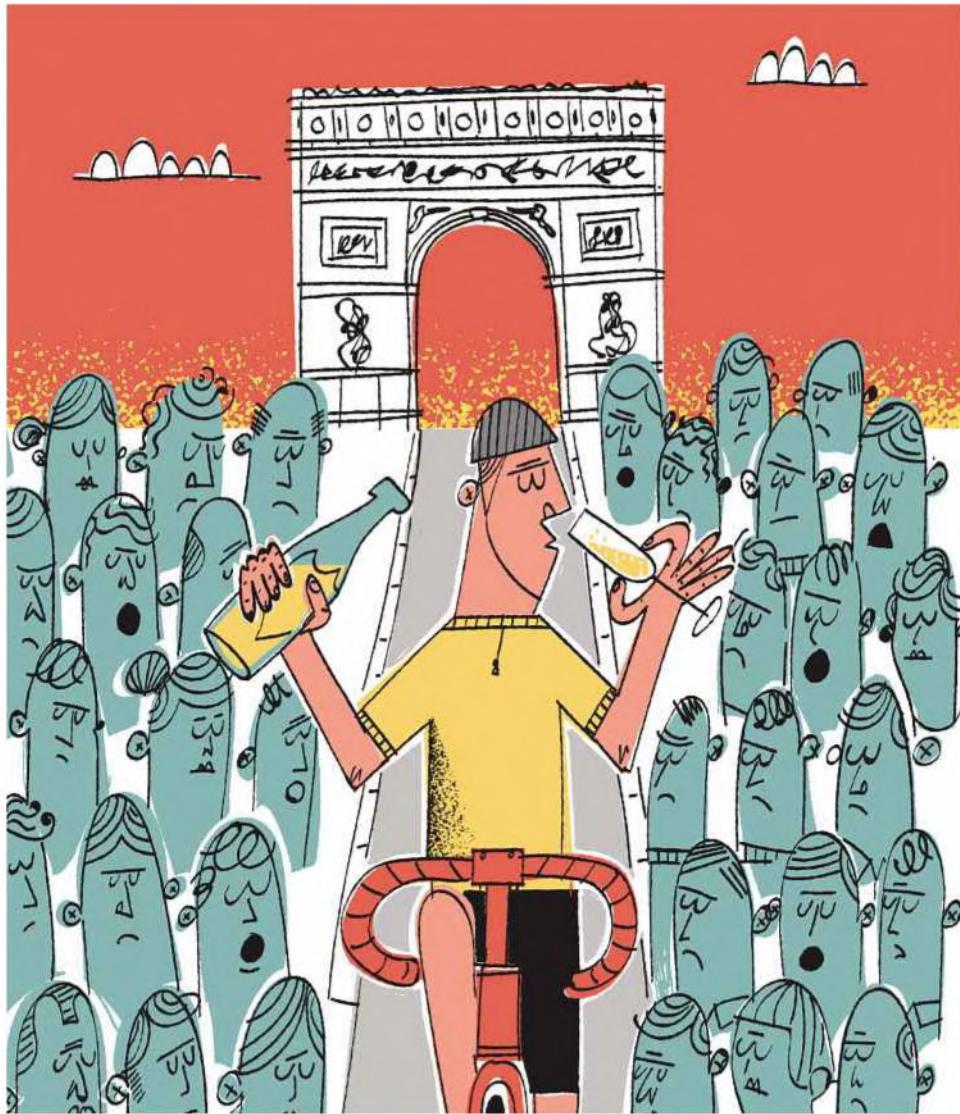
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Time for a rethink

Other than the hope of a Cavendish win on the Champs-Élysées, the Tour's champagne finale in Paris has lost its fizz, says Felix Lowe

There aren't many sporting spectacles where the participants do next to nothing until the very end. Skydiving, perhaps. England being knocked out of a tournament on penalties, certainly.

And then there's the Tour de France's final stage to Paris which, before those eight frenetic laps of the Champs-Élysées, features more relentless, champagne-fuelled horseplay than slow-motion replays of Oleg Tinkov at the Moscow State Circus.

We might get a sunset finish as the race loops around the Arc de Triomphe, but on the whole the Tour's 21st stage has become staler than the chunks of baguette served at Parisian bistros to hordes of British cycling fans with their Team Sky replica kits and sunburn.

We all know the drill of the final day on the Tour. The yellow jersey sipping plastic beakers of bubbly? Check. This same race leader proffering one finger for every overall win – adding an extra digit if he's Spanish and called Alberto? Check. Victorious teammates arm-in-arm in a long line? Check. A grinning rider (usually a French non-climber) decked out head-to-toe in polka dots? Check.

As the pack rolls into Paris the fans are treated to those splendid aerial shots of the Eiffel Tower and the Seine baked in sunshine – so familiar they could have been filmed the year before. Emerging from the Louvre underpass, an older rider (position vacant now Jens Voigt has retired) leads the peloton

onto the Rue de Rivoli. Someone has a pop on the Place de Concorde (position vacant now David Millar has retired) before a break forms on the cobblestones of the Champs.

Fast forward seven laps: the break is reeled in under the gaze of the Joan of Arc statue beside the Tuileries. A bunch sprint ensues. Mark Cavendish or Marcel Kittel wins. Occasionally – say seven times – the overall winner delivers a crass speech that will return to haunt him (position vacant now Lance Armstrong has retired, re-tried, re-retired, retreated and retrenched).

To avoid it becoming more tediously predictable than an Adam Sandler movie, here are five suggestions to put the sparkle back into the final stage of the Tour...

More climbs. It's high time the leisurely approach to the Champs-Élysées included at least one ascent of the Butte de Montmartre with double KOM points available going over the Sacré-Cœur summit.

More cobbles. If the small pebbles of the Champs and our new pavé detour via Montmartre aren't enough then how about a foray onto the bulbous flagstones of the Père Lachaise cemetery? Those traditionalists who complain that Henri Desgranges would turn in his grave can check for themselves: the Tour founder was buried there in 1940.

Epilogue TT. Ask anyone their stand-out Élysian memory and – Djambolidine Abdoujaparov's violent barrier-assisted cheese-grating in 1991 aside – most will cite Greg LeMond's time-trial win over Laurent Fignon from two years earlier. A final day 'epilogue' may go against the grain but it was responsible for the most slender victory (eight seconds) in Tour history.

Split stage. Perhaps you like the idea of a race against the clock but don't want to miss the best sprinters battle it out for green in the most coveted flat finish of the season. Well, the solution is easy: replace the processional ride into Paris with a 25km TT followed by a short city criterium. Sure, it could all be rather futile if the time gaps on GC are too large – but such a finish may shape the race and keep the excitement till the very end.

Staggered start. Treat the past 20 stages as if they were a mere warm-up for this, the main event. Riders leave one by one according to their time on GC, starting with the yellow jersey and ending with the lanterne rouge. While fans could be treated to a winner-takes-all sprint on the Champs-Élysées, they'd be less pleased at the prospect of waiting another six hours until Cheng Ji rolls home. *

Felix Lowe is Eurosport's Blazin' Saddles blogger and changes his ending with every single article he writes



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